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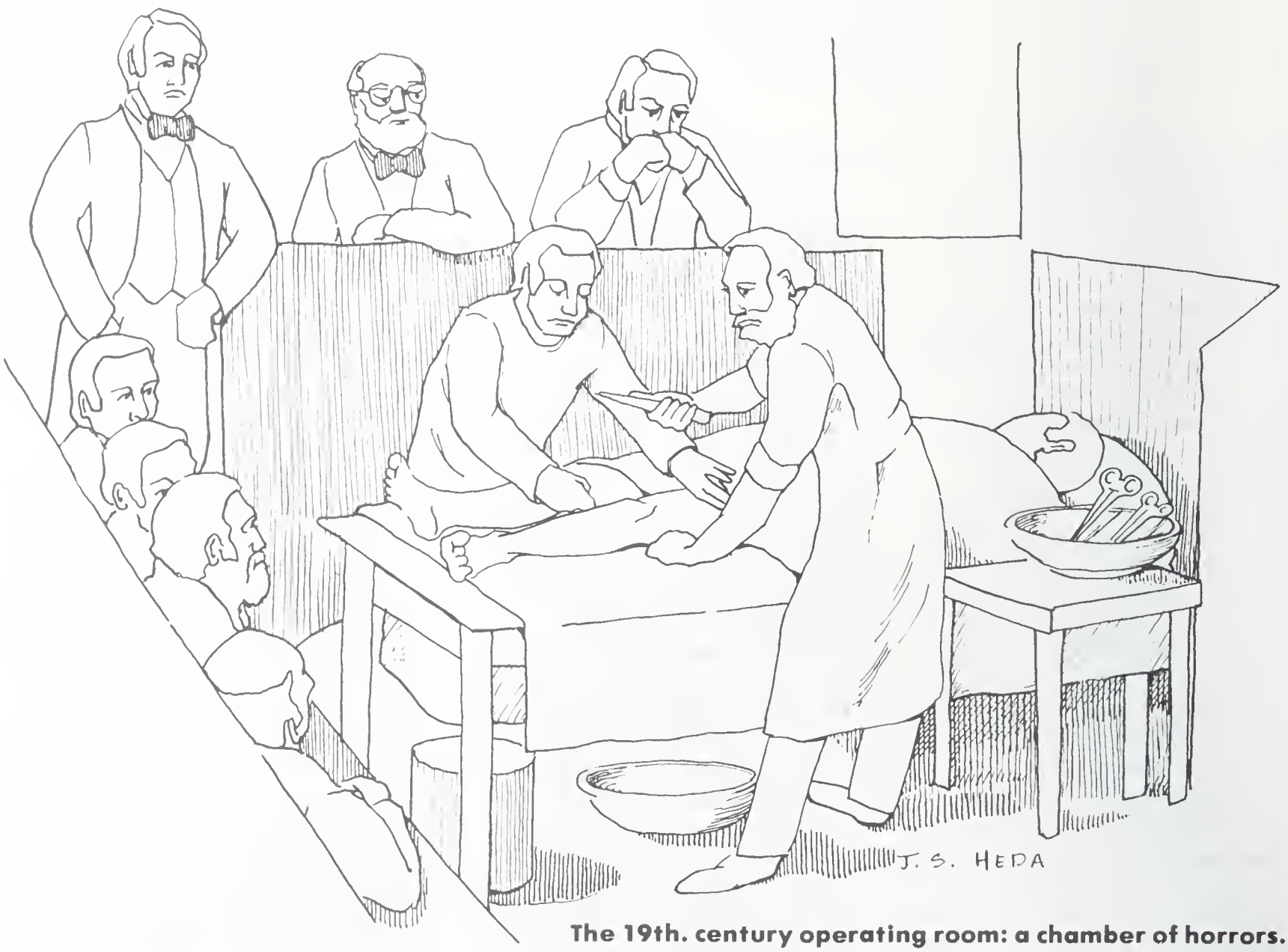
Impressions of a Nineteenth Century Operating Theatre

A.M. Summers 8T2

In Southwark, London, down the road from Guy's Hospital, and across from Keat's House, stands open the side door of a seedy-looking old building. Upon entering the door (armed with the information that within lies a restored early nineteenth century operating theatre, and not the London headquarters of the white slave trade), one is required to ascend a very narrow, rickety, wooden spiral staircase which eventually terminates in a small attic-type room. After paying 50p. and being given two sheets of information by a scholarly-looking gentleman, one ascends more slightly less death-defying steps to a large garret.

The pages of information explain that this is the herb garret of the old St. Thomas Hospital, although actually part of the adjacent St. Thomas Church built in 1702. This room contains a small medical museum illustrating aspects of pharmacy, surgery and nursing of the early nineteenth century. The surgery exhibit is both fascinating and horrifying. Although this time was the beginning of major



The 19th. century operating room: a chamber of horrors.

breakthroughs in surgery, it was still not much farther advanced than the Dark Ages — the only difference being that by this time magic spells were discouraged. Little or no deep surgery could be done because of the lack of anaesthetics and the inevitable infection. Infection was, in fact, so inevitable, that long strings of ligatures were left so that the 'laudable pus' might drain off more easily. So the operations were limited to things such as amputations, removal of superficial tumours, lithotomy, tracheotomy, and treatment of gunshot wounds. The more complex the operation, the more likely that the patient would expire from septicemia or shock. Amputation, being the most simple procedure, had a mortality rate of only 30%. Even complicated fractures resulted in a 25% mortality rate. Childbirth was another risky undertaking — 10-30% of the pregnant women admitted to hospital died of 'puerperal fever', presumably from being examined by doctors with dirty hands.

Consequently, going to hospital was not something to be faced by the weak of spirit. If the patient managed to survive an operation without anaesthesia he was likely to either succumb to 'hospital fever' (typhus) or to 'hospital gangrene' (septicemia), both of which were considered epidemics at the time.

Having skimmed through these exhibits, one continues the tour to view the 'piece de resistance'. More stairs are climbed to reach the back of the amphitheatre-style operating room. This is definitely the high of the visit from the standpoint of horror value alone. The information sheets tell one that the theatre was built for women patients in 1821 and continued in use until 1862. To further impress upon the tourist the atmosphere of the time, he is told that the first anaesthetic was used in Britain in 1846, and antiseptic or aseptic surgery was not even considered until 1867.

At the bottom of the viewing places for medical students, about five feet from the front row of students, is a scarred wooden table — the operating table. This was covered with a sheet during the operation. Underneath the table is a box full of sawdust which a sign on the wall cynically in vites one to notice explaining that this was pushed around by the surgeon with his foot to catch the blood. When it got too full, he merely called for another.

Also on the operating room floor is a wooden instrument cabinet lined with green baize. This, although probably more aesthetically pleasing than steel, did not do much in the way of maintaining sterility.

Finally, one notes a coat rack, and below it are a jug and a basin. Apparently, the doctor could hang up his coat and/or wash his hands if he felt so inclined. Most surgeons hung up their coats and rolled up their sleeves so as not to get their outer coats covered in blood and pus. They sometimes washed their hands before their operations, and if they forgot, they almost always washed them afterwards.

Having absorbed all of these details, one is left with the same feeling one gets after touring Madame Tussaud's Chamber of Horrors or the Tower of London. Anyone with even the most dormant imagination can picture the hapless patient tormented by incredible pain, surrounded by unmasked, probably unwashed doctors and medical students, knowing that if she survives, she will have to endure even more pain from the infection which could quite possibly kill her. One wonders why these people didn't prefer to die of their diseases or injuries.

Upon leaving this tiny museum, one feels eternally grateful for having been born in the twentieth century, and one wonders exactly how good the 'Good Old Days' actually were. □

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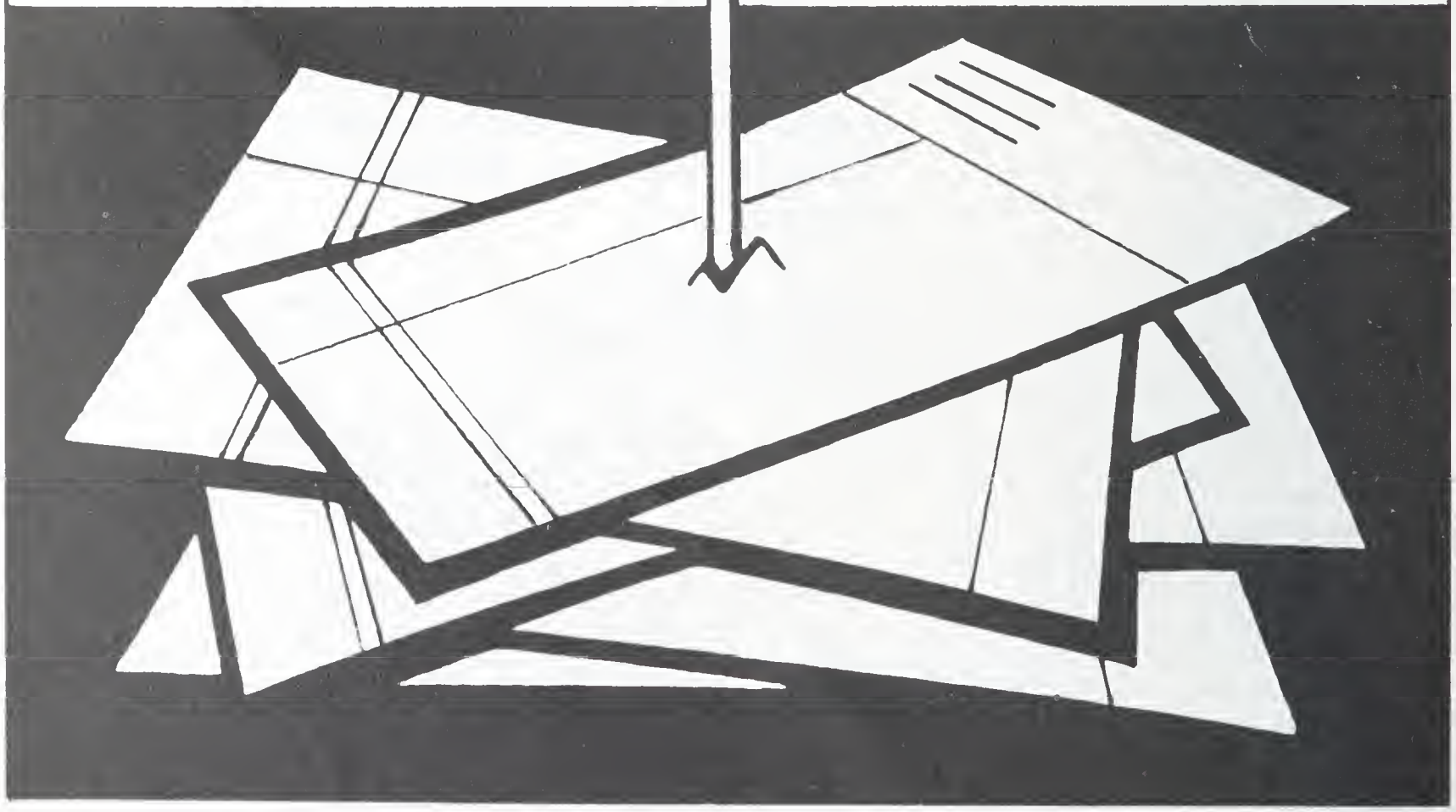


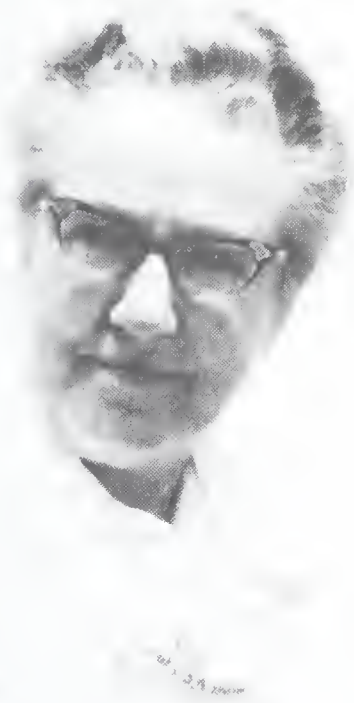
Dr. Jessie Gray:

A Tribute

Lidia A. Dykun 8T1

"Two roads diverged in yellow wood
and sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could.

Then took the other, just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear..."



In the History of medicine there have been many, who pioneered new and difficult paths. Did they tackle the unknown in the quest for knowledge? Or was it all merely an exciting pursuit of the mind which inadvertently led them through unfamiliar path? In the spirit of a pioneer, may we remember Dr. Jessie Gray — Canada's first women surgeon, who passed away on Oct. 16, 1978 at the age of 68.

"It is not surprising when a woman is a good surgeon, for after all, surgery involves one of the oldest feminine arts — the use of needle and thread!" In this characteristically modest manner Dr. Jessie Gray is reported to have acknowledged a tribute to her skill. She belonged to the second generation of women pioneers in medicine, but her entire career is an amazing record of firsts.

She was the first woman to receive a gold medal for the highest standing in the graduating class in medicine at The University of Toronto, the first woman to take the Gallie course in surgery, the first woman to earn a Master of Surgery degree, the first woman resident surgeon in the hundred year history of The Toronto General Hospital, the first woman to become a fellow of the Royal College of Surgeons of Canada, and the first woman member of the Central Surgical Society of North America. She was also a fellow of the American College of Surgeons.

As her career evolved, she joined an outstanding group of women on the staff of Women's College Hospital, in 1941 as associate in surgery and later became chief of surgery. In 1954, in recognition of her growing reputation, she was given the Elizabeth Blackwell Citation of the New York Infirmary. Furthermore, appreciation of her dedicated work at W C H was recently expressed by Dr. Joan Vale, at a Board of Governor's meeting:

"Dr. Gray earned the affection and respect of friends, colleagues and patients because of many admirable qualities. Her surgical judgement and techniques were so outstanding that she was called one of the four top cancer surgeons in North America. Patients felt secure with her cheerful demeanour and forthrightness. Superlative common sense and self-discipline not only were apparent to others, but also helped her to accept the progressive incapacity of prolonged illness."

Throughout her life, Dr. Gray maintained avid interest in 'the world beyond medicine'. In college she was a sports enthusiast, president of the hockey club, and first tennis player for three years for her college. Furthermore in college, she was a consistent winner of scholarships, including the Moss Scholarship for well-rounded competence. Throughout her professional career Dr. Gray was very interested in golf bridge. Along with W C H former chief radiologist, Dr. Elizabeth Forbes, they would set aside scientific work to plan building additions to a country home in the Caledon Hills.

After suffering from two heart attacks, Dr. Jessie Gray retired in January 1966 from her career as a surgeon. Yet, 1966 marked the onset of a two-year commitment to the Science Council of Canada. In 1968 — she was appointed a life fellow of the Academy of Medicine in Toronto. Also, her mark as a distinguished public servant was evident, when in 1973 she received a Civic Award of Merit from former Toronto Mayor David Crombie.

All would agree that Dr. Jessie Gray's pioneering career was remarkable. Many might say that it was stamina and dedication which propelled her to such great professional heights. Some might comment that it was all in the challenge of the mind. Others, will shrug their shoulders and continue to plod on with day-to-day commitments. Yet, let us ride along with Robert Frost's poem,

"...I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I —
I took the one less traveled by,
And that has made all the difference."

Robert Frost

The Oviducts: More Than Just A Pair Of Tubes

Robert Hegele 8T1

The oviducts (also called the uterine or fallopian tubes) are an essential and active component of the female reproductive system. They are, in effect, the liaison between the ovary (the producer of female gametes) and the uterus (the usual site of implantation of the blastocyst). This means that the oviduct plays at least two important roles. First, it is the place of meeting for sperm and ovum. Their interaction results in the transformation of gametes into a viable fertilized ovum. Second, it serves as a means of transporting the blastocyst to its site of implantation and subsequent development. Clinically, it is an area of great interest relating to contraception, fertility, ectopic pregnancy, salphingitis and neoplasia. Current research is directed towards studies of oviduct motility, innervation, its intrinsic and extrinsic influences, as well as any extraneous effects which oviduct function or malfunction might cause.

Anatomy

The oviducts develop from the embryonic para-mesonephric or Mullerian ducts in the absence of fetal androgens. In the mature female, the oviducts extend bilaterally from the ovaries to the cornuae of the uterus, a distance of 10-12 cm. They are commonly divided into four anatomical sections. Starting from the proximal end, there is the interstitial or uterine oviduct, which is actually within the muscular wall of the uterus. Next is the isthmus which is adjacent to the uterus and has a maximum lumenal diameter of 2-3 mm. The next most proximal section is the substantially wider ampulla (maximum lumenal diameter of 5-8 mm). Finally, there is the fimbriaeted infundibulum which opens into the abdominal cavity via the ostium and which is attached to the lateral pole of the ovary by the elongated *fimbria ovarica*. The oviduct is covered for virtually its entire length by the mesosalpinx. Its blood supply is from branches of both the uterine and ovarian arteries.

Histologically, the single-layered epithelium of the ducts consists of secretory and ciliated cells. The musculature of the tube is typically an inner circular and an outer longitudinal layer. Moving distally from the uterus, the layers become less distinct, forming an almost interwoven pattern at the infundibulum.

The innervation of the ducts is both sympathetic and parasympathietic from levels T_{10}-L_2. Animal studies by Owman et al (1966) reported in Pauerstein demonstrated that the isthmus region of each tube has heavy adrenergic activation of the smooth muscle, with little cholinergic innervation. The muscular anatomy along with the innervation in the tubal isthmus strongly indicate that this region may serve as an adrenergic sphincter.

Physiology

The oviduct, as part of the female genital tract, is of course, subjected to changing hormonal influences. Oviduct tissues contain specific estrogen and progesterone receptors (Roy, 1972). The effect of estrogen is an increase in proliferation and protein synthesis in ductal mucosal cells, especially during the growth and differentiation of the oviduct (Means and O'Malley, 1971). The presence of estrogen also seems to stimulate oviductal muscular contractions. On the other hand, progesterone probably inhibits epithelial proliferation and protein synthesis as well as toning down smooth muscle contractility.

During the proliferation phase of the sexual cycle, the tubal epithelium becomes very thick (probably due to the action of estrogen). In the secretory phase, the secretory cells protrude above the level of the ciliary cells forming small cupolae or domes which may rupture leaving the epithelium looking shaggy. During menstruation (and pregnancy) the epithelium is thin, the cells are relatively inactive and the nuclei appear to be packed together. Maia and Countinho (1970) reported that throughout the course of the ovarian cycle, estrogen enhanced and progesterone diminished tubal motility.

Role of Oviduct in Gamete Transport

Conduction of sperm from the site of ejaculation to the site of conception occurs more rapidly than can be accounted for on the basis of random sperm motility alone. This indicates the likelihood of some oviductal influence. But, how does the oviduct aid in conduction of the sperm distally while at the same time transporting the ovum proximally from the infundibulum? This question is

The oviduct and its relationship to the ovary and uterus.

far from being adequately settled, although the bidirectional propulsion probably occurs as the result of many interacting factors, including intrinsic sperm motility, sperm concentration gradient, ciliary action, muscular action and the effect of ductal secretions on the sperm themselves.

While awaiting the arrival of the ovum, the sperm must be kept alive and functional for one to two days in the oviduct. After this, their elimination occurs by macrophageal phagocytosis.

Ovum transport may theoretically occur by direct ovum propulsion, by indirect suction of ovum by contractile waves or by cilia propelling the ovum unidirectionally. This problem is still not completely resolved in the woman.

Role of Oviduct in Fertilization

Fertilization generally occurs in the ampulla, though this is not an absolute condition. The fertilized ovum is probably retained in the ampulla, perhaps through sphincteric action of the isthmus, for one to two days while the uterine endometrium is readied for implantation. On the third post-ovulatory day, the hormonal balance changes sufficiently to allow the continued passage of the fertilized ovum toward the uterus. During the time preceding implantation in the uterine wall by the end of the first week, the oviduct has to maintain the viability of the newly-formed blastocyst.

It is interesting to note that the oviduct is not essential as a fertilization site, as indicated by *in vitro* fertilization. Neither is it an absolute requirement for transport of gametes, as indicated by the rare cases of pregnancy in women lacking one ovary and the contralateral oviduct. Sperm can be frozen and later still have the capacity for fertilization, indicating that the oviduct is not indispensible in sperm storage and capacitance. It is also not vital for maintaining the fertilized ovum over relatively long periods of time as the elegant work of Edwards and Steptoe in England last year aptly demonstrated.

Current Research

Recently, studies have intensified on clearly elucidating the intrinsic and extrinsic influences on oviduct contractility. Talo, et al (1978) have demonstrated oviductal electrical slow waves, subject to parametric changes with changes in hormonal and other influences. Their work points out the similarity between electrically driven gastro-intestinal muscular contractions and those of the oviduct.

There has been speculation for some time that labour contractions are initiated in a manner analogous to a heart beat. In other words, the whole process of uterine contraction during labour is initiated by a "pacemaker" site within the uterine tissue. Such a "pacemaker" may exist within an oviduct. Friedman (1978) discusses the possibility of such a pacemaker in the right cornu of the uterus in some species. this is currently a fertile area of research.

Finally, Kent has suggested the possibility of the oviduct playing a role as an endocrine gland. In experiments which appeared in Johnson and Foley, Kent reported the isolation of a new steroid released from oviduct stroma which is necessary for proper ovarian function in some species. In addition, he was able to isolate from hamster oviducts a four-amino-acid polypeptide which functioned as a contraceptive. The relevance of this to humans remains a pertinent question. □

(continued on page 66)

Adrenoceptor Sensitivity, Ovarian Hormones And Mammalian Oviduct Physiology

Dorianne E. Rheaume 8T1

Although Fallopius is accredited with the first accurate description of the oviduct, its presence was realized as early as the eighth century B.C. In ancient Hindu medical writings there was reference to "two canals, the root of which is the uterus." Woodruff & Pauerstein, 1969).

Aristotle was aware of these uterine tubes but considered them indistinct from the uterus. Influenced by his concept of reproduction, according to which the female semen or 'catamenia' was secreted by the uterus, Aristotle assigned no function to the oviduct.

In the third century B.C., Herophilus first described the human ovaries and associated ducts. He referred to the oviducts as semen carrying vessels and correlated them with the epididymis and vas deferens of the male reproductive system. This comparison was important since it suggested that the oviducts originated from a gonad and might function as vessels for the transfer of gametes. Unfortunately, the analogy was extended in such a direction that Herophilus designated the termination of the female conduits to be in the neck of the bladder.

It was in the first century A.D. that Rufus of Ephesus, in his description of the sheep oviduct, established that the oviducts emptied into the uterine cavity. In the next century, Galen contributed to the state of knowledge by assigning a function to the oviduct. From his dissection of domestic animals, Galen described the oviducts as efferent vessels which conducted the female semen from the female testes (ovaries) to the horns of the uterus.

The next important contribution in the study of the mammalian oviduct was in the sixteenth century. Vesalius, still greatly influenced by Herophilus and Galen, retained the analogy to the male reproductive tract but did distinguish that the uterine tube encircled the female testes while the epididymis attached only to the posterior surface of the male testes. In 1543 he described the course of the 'semen-carrying vessel' almost correctly but failed to recognize that the oviduct was not actually attached to the ovary (Herlinger and Feiner, 1964).

Hence, Gabriele Fallopius in 1561 produced the first accurate description of the oviduct (Fallopian tube) and its anatomical relationships. He referred to the oviduct as an independent organ with a specialized structure at the abdominal end. While Fallopius had established the foundation for further understanding of oviduct function, limits to advances in this area were imposed by the traditional concepts of generation and embryogenesis.

However, in the second half of the seventeenth century, Johannis van Horne detected the presence of ova in the ovaries and noted that the Fallopian tube was hollow and communicated with the uterine cavity. He suggested that the oviduct might carry the ova to the uterus, but this theory was often disclaimed on the basis of the structural discontinuity between the oviduct and ovary.

In 1724, Dionis proposed that, by the action of ligaments, the oviduct may be brought into close contact with the ovary. Some fifty years later, Cruickshank described the fertilization of ova within the tube and studied the time course of ovum transport in the rabbit oviduct. Thus, the eighteenth century was the seat of increased interest in oviduct fuction. Longitudinal and circular muscle fibres of the oviduct were described in this century, and oviduct motility was a subject of increased investigations.

By the mid-nineteenth century, knowledge of the mammalian oviduct was relatively complete: its general structure was known, the oviduct was considered the site of fertilization and early embryogenesis, ciliary and muscular mechanisms were invoked to account for ovum transport, and the secretory function of the oviduct was recognized.

Thereafter, the origin of the sympathetic innervation to the female reproductive tract was described by Langley and Anderson (1896). Along with the advent of methods of studying tubal motility (kymography, tubal insufflation), this facilitated physiological analyses and pharmacological manipulations of the oviduct smooth muscle.

Thus, the historical background to the present discussion of adrenoceptor sensitivity in the isthmus of the

mammalian oviduct is extensive and colourful. Presently, there are several books and review articles which are devoted to a comprehensive discussion of the oviduct and its funciton and, most recently, Paton *et al* (in press) have discussed the role of the adrenergic nervous system in the regulation of function of the mammalian oviduct.

Adrenoceptors in the Mammalian Oviduct

Introduction

The first pharmacological studies performed on the oviduct revealed that the smooth muscle of the human and pig oviduct was sensitive to adrenergic stimulation (Kok, 1927). Davids and Bender (1940) measured *in vivo* motility of rabbit contractile responses to adrenaline. It is interesting that these early workers reported the importance of hormonal status on the sensitivity and nature of the response of the oviduct to andrenergic drugs.

Subsequent to Ahlquist's study (1948) of the adrenotropic receptors, investigators employed the selective application of adrenergic agonists and antagonists to define the adrenoceptors in a large number of smooth muscle preparations including the oviduct. Evidence has accumulated to indicate the presence of both alpha-excitatory and beta-inhibitory adrenoceptors in the oviduct of various mammalian species.

Rabbit Oviduct

In the rabbit oviduct, adrenaline, noradrenaline and phenylephrine elicit contractile responses which are antagonized by the -adrenoceptors blocking agents phentolamine or phenoxybenzamine (Ueda *et al.*, 1973; Paton *et al.*, 1975).

Stimulation of rabbit oviduct *in vivo*, by hypogastric nerve stimulation (Brundin, 1965) and *in vitro*, by transmural stimulation (Hodgson *et al.*, 1973; Johns and Paton, 1975) also causes contractile responses which are eliminated by alpha-adrenoceptor blockade. The contractile effects of hypogastric nerve stimulation are also blocked by pre-treatment with reserpine (Brundin, 1965). These results and other studies (Hodgson *et al.*, 1973; Johns and Paton, 1975) indicate that the oviduct's contractile responses are caused by the activation of alpha-adrenoceptors by neurotransmitter released by adrenergic nerve endings.

The beta-agonistic isoprenaline inhibits tubal motility in the rabbit and this is inhibited by propranolol (Longley *et al.*, 1968; Hodgson and Pauerstein, 1974; Heilman *et al.*, 1976). In the presence of phenoxybenzamine, the response to noradrenaline (formerly contraction was reversed and was expressed as a relaxation (Ueda *et al.*, 1973). The occurrence of the beta-receptors in the rabbit oviduct was thus confirmed in these studies which also reported that stimulation of beta-adrenoceptors mediates relaxation in the rabbit oviduct.

Recently, Kendle and Lam Shang (1976) have further defined the type of beta-adrenoceptor in the rabbit oviduct. They reported that in the presence of practolol, the contractile response to adrenaline was potentiated in circular muscle but not in the longitudinal layer. Salbutamol, a B_2 agonist, was found to cause inhibition in the longitudinal muscle layer but not in the circular layer. From these results they suggested that the inhibitory receptors in the longitudinal muscle is of the B_2 type, while that in the circular muscle is of the B_1 type. Their proposal was intended to explain the difference in relative potency of adrenaline (,B_1,B_2) and noradrenaline (,B_1) in the two smooth muscle layers.

In the work performed by this author, the beta-adrenergic receptor of the circular muscle of rabbit oviductal isthmus was characterized (Rheaume and Paton, 1978). The order of potency for adrenergic agonists on beta-receptors of circular muscle of rabbit isthmus was (±)-isoprenaline greater than or equal to (−)-noradrenaline greater than (−)-adrenaline much greater than (±)-salbutamol), indicating the presence of the B_1 receptor. Salbutamol, a selective B_2-agonist was found to be much less potent than adrenaline. Not only was the potency of salbutamol reduced, but so too was its maximum inhibitory effect. These findings provided information about the beta-adrenergic subtype and that it might be B_1 in nature.

Human Oviduct

Similarly, alpha-excitatory and beta-inhibitory responses which may be blocked with suitable adrenergic blocking agents have been demonstrated in the human oviduct. In 1960, Sandberg *et al* measured contractions of longitudinal muscle following administration of adrenaline or noradrenaline to the preparation. Another *in vitro* investigation of autonomic responses of human Fallopian tube (Rosenblum and Stein, 1966) monitored changes in perfusion pressure following challenge with noradrenaline and isoprenaline. Both caused an increase in perfusion pressure which was attributed to contraction of the circular muscle layer. In the presence of phenoxybenzamine, this response was reversed to one of relaxation and hence, indicated the presence of both - and B- receptors.

- and B- adrenoceptors have been demonstrated in the oviducts of all species studied. Activation of -adrenoceptors results in contraction of oviductal smooth muscle while activation of B-adrenoceptors results in inhibition of contractility.

Hormones and Adrenoceptor Sensitivity

Early experiments revealed that estrogen and progesterone were involved in the regulation of the cyclic nature of muscular activity in the female reproductive tract. The general finding was that estrogen activated and progesterone inhibited the physiological and pharmacological sensitivity of the smooth muscle of the oviduct. For example, administration of estrogen to castrate rabbits induces an increase in the frequency of tubal contractions (Coutinho and de Mattos, 1968) while progesterone reduces both the frequency and the amplitude (Coutinho, 1973). Similarly, the tubal response to noradrenaline is depressed during progesterone dominance (Higgs and Moawad, 1974).

In ovariectomized rabbits the uterus becomes quiescent almost immediately while the oviduct retains its motility for several weeks following the ablation of the sex

(continued on page 65)

GOLD MEDALLISTS

The Cody Gold Medal has traditionally been the most coveted and respected award in medicine. It is given to the medical school's most outstanding graduate on the basis of four years of academic and clinical excellence.

The *Journal* contacted Gold Medallists of the past and asked them to complete an autobiographic sketch along with any opinions or advice they may have cared to proffer. Their profiles illustrate the richness and diversity of medicine for these men and women are involved in every field of medical science and have worked all over the world. Their personal lives reflect their individuality as their opinions reveal their insight and experiences.

Dr. Omond Solandt **Graduating Year: 1936**
Bolton, Ontario **Age:** 69

Dr. Solandt has never practised medicine. His career is a tapestry of accomplishment. It began in Toronto where he worked as a graduate student under the supervision of Dr. Charles H. Best who steered him toward a career in medical research. He obtained his M.A. in physiology in 1933 and in 1936 graduated from Medicine with the Gold Medal. During his medical studies he was the editor of the U. of T. Medical Journal.

With the intention of eventually concentrating on clinical cardiology as a medical researcher, Dr. Solandt began work on his second M.A., in pathology, at Cambridge University. He earned his Master's degree in 1939 and in between completed a rotating internship.

When World War II broke out in September 1939, he accepted a position as director of the London blood supply depot at Sutton, Surrey. Heading that unit, he had the responsibiltiy of supplying blood transfusion equipment and advice in the treatment of shock to hospitals in his region. He was next posted to the Armoured Fighting Vehicle School to study the physiological problems of tank crewmen and his research on tank design led to his assignment in 1942 as head of the tank section of the Army Operational Research Group. He was commissioned a colonel in the Canadian Army before discharge from service after the war.

In the summer of 1945, the British Army appointed Dr. Solandt to the post of scientific adviser to Lord Mountbatten in the Southeast Asia Command. He was on leave awaiting embarkation when the war ended. He then became a member of the British team that joined the United States Strategic Bombing Survey to evaluate atomic bomb damage in Japan.

On his return to Canada, the government lost no time in enlisting his expertise as a scientist and administrator. In 1946 he accepted the challenging position of director of defence research. The following year, he organized and chaired the Defense Research Board - a government agency responsible for the coordination of all research and development of the Canadian army, navy and air force.

Dr. Solandt's career took a new direction in 1956. He turned his attention from problems of defence to those of industry and was made vice-president for research of the Canadian National Railways. In that job, he proved him-

self a strong advocate of an integrated system of rails and highways. Because of his responsibilities in development and research, Dr. Solandt was intensely concerned with the problem of Canada's shortage of scientists and technicians, which by the mid-1950's seemed to be approaching a national emergency. He urged that Canada prepare itself to train more of its own scientists and engineers.

Internationally, Dr. Solandt was involved in the grave issue of the nuclear bomb. He represented Canada at the East-West atomic test ban talks held in Geneva, 1958. Canada was one of four Western countries to send experts to meet with scientists of the Soviet bloc for technical discussions on policing suspensions of tests of nuclear weapons.

In 1963, exchanging his role in government for a similar one in private industry, Dr. Solandt left the C.N.R. to become vice-president for research and development of de Havilland Aircraft and Hawker Siddeley. Just as he had argued the importance of universities' supplying engineers and scientists for defence and industry, he tried to encourage business to appoint more scientists to executive positions. He maintained that the development of more research facilities in Canada would curtail the departure of researchers to the United States.

1966 to 1972 saw Dr. Solandt as chairman of the Science Council of Canada. The newly-formed Council was meant to advise government on scientific and technological matters. The standard of living, pollution and transportation were among its focuses of applied scientific knowledge. During this time, he also served as chancellor of the University of Toronto.

Three years with Mitchell, Plummer & Co. were followed with a position as Senior consultant of the Institute for Environmental Studies (U. of T.). The threats of pollution and other environmental disturbances had long been of great concern to Dr. Solandt and as early as 1966 he warned, "The introduction of DDT has provided a recent and striking demonstration of the problems that arise when man intervenes in a complex ecological system".

For the last three years, Dr. Solandt has been occupied with a wide variety of consulting jobs which include Cold Ocean Resources Engineering, Drylands Agriculture in Lebanon, Maize and Wheat in Mexico, Insect Physiology and Ecology in Kenya and work with l'Institute de la Vie in Paris.

At least a dozen colleges and universities have conferred him with honorary doctorates. His other awards include the Order of the British Empire, the U.S. Medal of Freedom and the Gold Medal of the Professional Institute of Public Service of Canada.

Dr. Solandt is married and now lives in the Albion Hills, north of Toronto. He is a charming man who loves to meet people and exchange ideas. His most active hobby in canoeing which he pursues with more gusto than younger men are able to muster. Over the years, he and a small group of adventurers have retraced by canoe the old voyageur routes. Sigurd Olson wrote of one of their journeys in his enduring book, *The Lonely Land*.

Dr. Solandt is reluctant to give advice to medical students but he does observe that "The medical profession seems to be losing its position of social leadership. I feel that as the acknowledged experts in human health, both physical and mental, the medical profession should have been the leaders in every sort of environmental activity. Medicine as a whole could be regarded as human ecology so that the profession should be concerned with man's relationship to his total environment. This outlook would naturally put greater emphasis on preventive and occupational health measures with a resultant reduction in the need for the care of illness."

Dr. Omond Solandt has had a profound and invigorating impact on the intellectual and economic life of our country. There are very few men who have ever done so much, so well and with such dedication. □

Lynn McIntyre 8T0

Dr. May Cohen **Graduating Year:** 1955
Burlington, Ontario **Age:**47

Following my M.D. in 1955, I did a one year rotating intership at the Toronto General Hospital followed by two years as a Medical Research Council of Canada Fellow in Endocrinology working under the supervision of Dr. Jack Laidlaw at the University of Toronto. This involved work in the clinical investigation unit as well as in the laboratory.

At the end of my second year with Dr. Laidlaw, I gave birth to our first son and shortly thereafter entered into general practice with my husband. He was a classmate, Gerald Cohen, who was a silver medallist in the same year and had entered into general practice in Downsview the year preceding. We remained in general practice as part of an enlarging group until September of 1976. During that time, we were on the active staff of North York Branson Hospital in the Department of Family Medicine.

In 1976, both my husband and I joined the Department of Family Medicine at McMaster University, a position which we are currently engaged in. My official rank here is Assistant Professor, Department of Family Medicine. In this position, I am involved in teaching both residents in family medicine as well as undergraduate students. I am doing limited clinical work on my own and have also been able to pursue an interest in human sexuality and have become a resource person in the Department of Human Sexuality here at McMaster.

As far as my personal life is concerned, we now have three sons ranging in age from 10 to 20. My husband and I have certainly benefitted from the opportunity to share our professional interests as well as our personal interests. In addition to medicine, I have interests in symphonic music, in football, winter sports and in sailing. □

Dr. G.A. Lane **Graduating Year:** 1940
Hamilton, Ontario **Age:** 62

Education obtained after M.D.:
Gallie Course in Surgery — Toronto General Hospital
M.S. — U of T.
F.R.C.S. (C)

Present Position:
Chief of Staff, St. Joseph's Hospital
Senior Consultant — Head & Neck Surgery, Ontario Cancer Foundation, Hamilton Clinic.
Associate Professor of Surgery McMaster University

Career Highlights:
General surgery with recent emphasis on surgery of the Head and Neck.
Organized the Hamilton Goodwill Africa Foundation after a two month experience in Africa with a group of Hamilton doctors and their wives.
15 years service with Canadian Crossroads International.

Personal Life:
Married — 30 years to the same woman.
7 children — 1 in the Gallie Course in Toronto
1 in medicine — U of T.
1 Operating Room nurse — McMaster University
1 Business Admininstration graduate
1 Bachelor of Commerce
2 to be heard from (grades 6 and 11)

Future plans:
No more children
Stay married
Retire sometime.

Advice to medical students and young physicians:
All work and no play makes Jack — and plenty of it
But it also makes a dull life.

Your opinions on the following topics are welcomed:
a) adequacy of present medical training
b) government policies
c) what is lacking in present day medical care?

a) History taking and physical examination is becoming a lost art. Too much reliance on lab. and x-ray to the detriment of the patient.
b) Unspeakable.
c) The personal touch. Too much work and too many patients who are too demanding. □

Dr. Douglas R. Wilson **Graduating year:** 1959
Toronto, Ontario **Age:** 43

Present position:
Director, Tri-Hospital Nephrology Service for T.G.H. - Mount Sinai-Women's College.

Previous positions held:
Co-ordinator of Nephrology, University of Toronto, Professor of Medicine, U. of T.

Career highlights:
4 years of training spent in other centers (Boston, London) was a real highlight that made many friends in other countries who we still see at intervals.

Present post involves challenging mixture of administration, research, teaching and practice in a field of internal medicine (nephrology) which was not developed at all when I graduated. It has been great fun to participate in its development and growth.

Future plans:

More of the same!

May spend some time in developing countries as need for teaching in renal disease and renal failure program develops (dialysis, transplants, etc.).

Advice to medical students and young physicians:

Enjoy your undergraduate years and participate in outside activities to keep your interests broad.

Pick an area of medicine that you will enjoy — don't be too concerned if it appears crowded — then get the best training you can for it and don't cut training short.

Your opinions are welcomed:

a) Different methods of training end up with similar "product" - it is the amount of input and effort by the student which most influences the outcome (motivation, interest).

b) Government is prepared to listen but has difficulty acting — they would like to find a way of controlling health care costs but are unwilling to make unpleasant choices.

c) Drift towards "automation" — too many patients, too little time — we must guard against depersonalizing care.

d) Physician must be more of an educator of patients (and public) regarding health problems — more open.

e) Medical research must not be down-graded as a career choice for able, interested graduates — the medical schools need new people as clinician-scientist and teacher. Research is vital to a university medical school — otherwise we are a technical college. Government and public (and profession) must be made to understand this, if quality of care is to continue to improve.□

Dr. F. Marguerite Hill **Graduating Year:** 1952
Toronto, Ontario

Education:

Before M.D. M.A. in Psychology. After M.D. F.R.C.P. (C) Toronto 1957

Present position:

Physician-in-chief, Women's College Hospital

Career Description:

Research limited to clinical investigation of asymptomatic bacteriuria. Medical practice consists of consultations in general internal medicine.

Personal life:

Holidays alternating between the Arctic in the Northwest Territories at the end of June for bird-watching, flower-watching and for the joy of beautiful scenery and no telephone — and snorkelling in the Carribean in the fall.

Future plans:

To continue medical practice to age 65 (if I can make it) and retire while I trust I am still fit to get involved in non-medical activities.

Advice to medical students and young physicians:

You are in an occupation that demands a great deal of you but that can be very exciting. Don't lose your curiosity, nor miss the opportunities to question what you are and what you are doing, and learn from every patient.

Your opinions on any of the following topics are welcomed:

a)adequacy of present medical training

b)What is lacking in present-day medical care?

a) For a good student the form of the medical training doesn't matter, he or she will do well in any system. For the average or below average student, I don't think they are stimulated enough to work up to the level of their above average intelligence. Good clinical judgment, sensitivity to patients as people and a sense of responsibility are qualities that we cannot "teach", but to me they are the most important qualities for good doctors.

b) I think we do not assess the benefits of the things we do to patients well enough. I am sure that in the teaching hospitals we over-investigate to satisfy our curiosity rather than to help the patient. We do very few studies to follow up the benefits of our treatment, the patients' understanding of our instructions etc..

With limitation of funds for medical care, we need to assess every test and procedure considered for each patient, and we have to come to terms with what is important and what we cannot afford.□

Dr. Louis J. Harris **Graduating year:** 1929
Toronto, Ontario **Age:** 72

Present position:

Honorary Consultant in Obstetrics and Gynecology at Mount Sinai Hospital; still practising by office consultation only.

Previous positions held:

Chief of Obstetrics and Gynecology, Mount Sinai Hospital 1953-1970, Chief of Staff, M.S.H. 1968-1970, Assistant Professor of Obstetrics and Gynecology, U. of T.

Career Highlights:

Mainly interested in infertility problems. Founder and first president of Canadian Society for Study of Fertility. Perfected the "Fertility Obturator" and the "Aortic Compressor". Have had a busy Obstetrics and Gynecology practice in Toronto from 1936 until the present time.

Future Plans:

To go on working as long as I can do so competently. To write a book on "Fertility" for the public. Hopefully to work until I die.

Advice to medical students and young physicians:

Work hard, play hard, try your best to stay healthy. Always have an inquiring mind and a ready sense of humour and always be honest and friendly.

Comment:

I believe the greatest advances in medicine in the next century will be in preventive medicine. I think it is in this aspect of our art that our training and research is most remiss. □

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Psychotherapeutics

Janice Armstrong 8T0

A problem facing the psychiatric patient today is that of choosing the most appropriate treatment for his or her problem. In recent years, a large number of psychotherapeutic methods have become available, many of which have reached the popular literature. In this essay, I intend to discuss three of these popular therapies; Transactional Analysis, Gestalt and Primal Therapy, in terms of their methods and underlying theories of personality and pathogenesis. These will be compared and contrasted to some selected aspects of the better established theories; Classical Psychoanalysis, and Behaviorism.

Psychoanalysis

Psychoanalytic therapy consists of the development of insight into one's personality through the use of free association and the translation of symbols from dreams. According to this theory, mental illness arises from abnormal gratification during one of the set stages of development, leading to a fixation at that stage.

The first stage is the oral stage, lasting to the age of eighteen months During the oral stage, the child attempts to gratify his oral libidinal needs by feeding, and establishes a pattern of trust and dependence on his mother. Too much or too little oral gratification leads to a fixation, producing excessive dependence on people and objects, and a lack of trust when that child reaches adulthood. The second stage is the anal stage, from ages one to three, followed in turn by the phallic from age three to five, latency, from age five to thirteen, and the genital stage, which continues into adulthood. Each of these is associated with a specific area of development, leading to a specific abnormality if fixation occurs at that stage.

By the end of development, according to Freud's structural model, there are three levels of the mind. The id, or instinctual level, is in existence right from birth, is disorganized, and acts as a reservoir for energy. The ego, however, is probably not present at birth but develops with the child in order to conform the id to the pressures of reality, evaluating and judging the external world. The superego is the last to develop, resulting from the learning of moral behavior from the parents by the end of the phallic stage. It plays the supervisory role in the mind.

As the developing child proceeds through the stages, he is expected to feel an anxiety characteristic to his stage, for example, the fear of loss of the mother during the early stages. Earlier anxieties may persist into later stages reflecting neurotic fixation.

Anxieties are of three types: real, where the danger feared is external; neurotic of the fear of harmful consequences from the id erupting out of control; and moral anxieties representing fear of punishment from the superego. They are a signal to the ego that there is danger. This causes the ego to institute various defense mechanisms. Defenses which are excessive or inappropriate are symptoms of an underlying pathology, representing fixation at earlier stages when immature defenses were employed, or an imbalance of the id-ego-superego triad. Examples of immature defenses are:
1) introjection, the attributing of the characteristics of others to oneself
2) regression, a return to a previous stage of development.

Having delusions about reality, in which one's own unacknowledged feelings are attributed to others is projection. This and denial, which distorts reality to fit one's wishes are narcissistic defenses. Rationalization is the justification of unacceptable behavior by disguising one's motives. This is a neurotic defense, as is repression, keeping undesirable ideas or feelings out of conscious awareness. All of these are symptoms of an underlying disorder.

The adult who is fully developed has so-called mature defenses, which are necessay if the ego is to maintain control and prevent anxiety. One of these is anticipation, or planning realistically for future problems. Another is sublimation, or the redirection of unacceptable impulses into constructive activities. This allows the release of the energy of the id while the ego retains control.

The purpose of analysis is to understand the defense mechanisms and dig beneath them to discover the underlying anxiety. Once the patient's attention is brought to the source of his neurosis, he will realize it is irrational and so be cured. The psychoanalyst relies heavily on symbolic cues to achieve this goal. During treatment sessions, the patient lies recumbent on the couch and freely

associates, unguided by the therapist. The therapist's role is to act as a mirror for the patient as he identifies the therapist with various people from his past. This is the transference phenomenon, which is analysed by the therapist along with the results of various projective tests and symbolic material from dreams. He interprets what the patient says and challenges the defenses, attempting to discover the source and reasons for the various manifestations of illness. The process allows the patient to recollect forgotten memories from his childhood, and thus gain greater insight into the origin of his problems.

The process of psychoanalysis is extremely long and intense, requiring four or five sessions per week for a period of several years. This long therapy is still of questionable effectiveness, and objections have arisen to this and to many aspects of the basic theory. There is some disillusionment with the model of all man's troubles stemming from sexual frustrations during childhood, with such little emphasis on the present.

Behaviorism

The methods employed in Behaviorist therapy are very different from those used in psychoanalysis. Behavior theory originated in the 1920's with Pavlov's work on conditioned reflexes in dogs. The behaviorists postulate that all human action is a result of past rewards for similar action, or the association of a situation or stimulus with an appropriate action. Neurosis results from the learning of maladaptive responses because of inappropriate rewards (positive reinforcement) for "bad" actions, or aversive stimuli (negative reinforcement) for "good" actions. Any neurosis, then, should be curable by the use of relearning of appropriate actions to respond to various stimuli. This is accomplished using the following types of reconditioning.

The first of these is positive counterconditioning. If a person has, in the past, associated a certain action with negative consequences, during positive counterconditioning, the person is rewarded for peforming that action. An example of this would be someone who had been bitten by a dog and had subsequently developed a fear of dogs. To recondition, the person would be exposed to a dog during a pleasant experience, therefore associating dogs with the pleasant rather than the unpleasant episode in the future.

Aversive conditioning is the opposite. In this case, the patient is punished for unacceptable behavior via an electric shock or a nausea producing drug. An example of this is the use of disulfiram to help alcoholics, as the drug makes the patient feel ill whenever he drinks alcohol.

Extinction is neutral. The patient performs a specific behavior with no reinforcement, positive or negative and gradually "unlearns" the behavior. This type of treatment is commonly used for phobias, the patient being exposed repeatedly to the fear inducing object until it is no longer a source of discomfort.

Reconditioning is useful in many types of disorders, including phobias, sexual deviancy, speech disorders and reversing the withdrawl of schizophrenia and autism. Theoretically, it should be applicable to any condition which a specific stimulus can be associated with a specific undesirable type of behavior.

The objection to this type of treatment is that, in contrast to psychoanalysis, almost no attention is paid to the original source of the behavior. The behaviorist believes that insight into the problem has no use whatsoever. There is some feeling, however, that this is simply treating the symptom rather than the disease. This shows the basic differences betweeen psychoanalytic and behavior theory. The question arises as to whether psychological disease is the result of an underlying conflict or simply of learning, in which case the symptom is the disease. It would therefore require no treatment other than relearning. There are various practical differences between the therapies as well. Learning therapy requires only one or two sessions per week for a period of time anywhere from a few weeks up to a few years. The focus is placed on present events and interpersonal relationships, and there is no use of symbolic material to analyze the unconscious.

Transactional Analysis

Transactional analysis bears some similarities to both of the previously mentioned theories. It was originated by Dr. Eric Berne who attempted to present his ideas in layman's terms so that they would be easily understood and applied by the patients.

The theory behind transactional analysis is that everyone's personality is made up of three levels of ego states. These are the parent, adult, and child. Each of these states represents a specific person who actually exists or once existed. The parent represents the behavior of the person's mother or father, acting in a judgmental role. The rational aspect is the adult; the mature, intellectual part involved in the objective evaluation of the external world. The characteristics of the child are identical with the characteristics that the individual possessed as a child. The child may be the "adapted" obedient child, or the natural child; depending on the influence of the parent.

As development proceeds, the personality is built up somewhat like a pile of coins, where each experience is represented by a coin. Well-balanced, normal experiences are piled straight on top of each other, leading to a well-ordered pile, but one traumatic experience is like a bent coin and will affect the balance of the entire stack of coins above it. Either a large number of "bent coins" or one particularly bad "coin" may cause the stack to topple later in life.

Pathology results from an imbalance of the ego states, or an inappropriate shifting of states. Structural pathology deals with anomalies of psychic structure, two of which are exclusion and contamination.

Exclusion is the situation is which one ego state in constant. This may be the fixated child, natural or adapted, or maybe the adult attempting to deny or control the childish aspect of himself.

In contamination, part of the parent or child intrudes into the adult ego state. This is evidenced by the rationalization of parental or childish attitudes; for example, if the parent has a prejudice, it contaminates the adult such that the adult will cite rational reasons for the prejudice.

A second type of pathology is functional; related to the lability of

change between the ego states. The patient may either remain fixed in each ego state for extended periods of time, or shift rapidly between the ego states.

The analysis of the ego states is called structural analysis, and must precede transactional analysis proper. By the end of structural analysis, the patient is expected to have analysed and segregated his ego states and obtained self-control. If he goes on to transactional analysis, he will analyse his social interactions and learn control of himself in social situation, in spite of the attempts that others may make to activate his parent, adult or child. This phase of therapy is usually performed in a group.

Transactions are of three types; pastimes, games and scripts. In a pastime, the transaction is straightforward. It is, as the name implies, a way of passing the time is order to get acquainted. In a group, transactions are usually parental or adult since their purpose there is to avoid the issue, which revolves around the child. Pastimes include such discussions as "General motors" (comparing cars), "Who won" and "How to" (go about doing something).

In a game, the players have ulterior motives. The apparent topic of discussion is a means of making some psychological gain. These social interactions can be diagrammed to show that the social level of conversation is not the same as the psychological level. As an example, I will use the game "Why don't you... yes but" discussed by Berne is *Transactional Analysis in Psychotherapy*.

In this game, one player presents a problem, and the second player offers solutions. The original player gives reasons why none of the solutions will work. At the social level, the interaction is between two adults, whereas at the psychological level, it is parent to child. The transaction would be diagrammed as illustrated in Fig. 1.

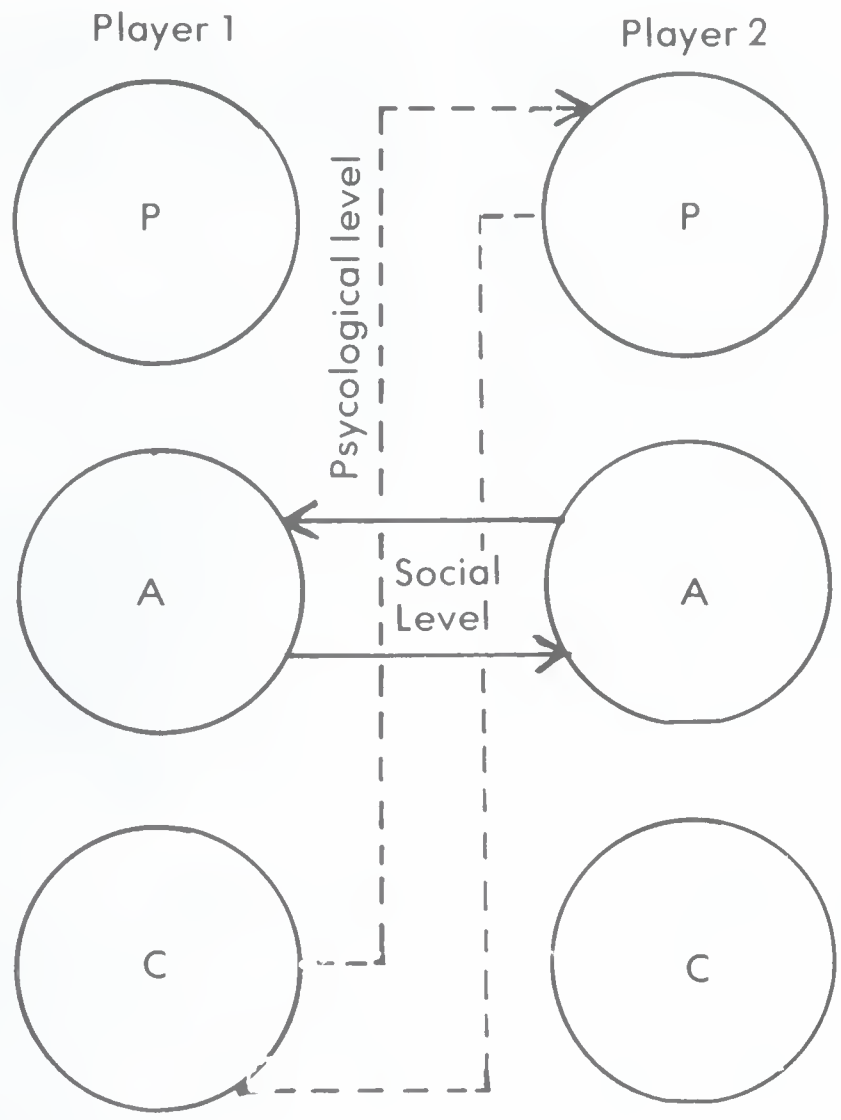

Figure 1

Games are parts of more complex interactions called scripts. The script is laid down in childhood and predicts a person's interactions with others throughout his lifetime. They are of four possible types; "I'm OK, you're OK," "I'm not OK, but you are," "I'm OK, but you're not" and "Neither of us is OK."

By the analysis of pastimes, games and scripts, patients can make the desired changes in themselves, not by changing the actual ego states, but by changing a script which they realize may be destructive, and by learning to protect themselves from the excessive demands of the parent or child.

Much of this process is achieved in a group treatment situation. The group supplies a social situation, which is a ready source of analyzable transactions, and is therefore highly useful in transactional analysis. In contrast, group treatment is never used in classical psychoanalysis, and is only occasionally used by behavior therapists.

Gestalt Therapy

Whereas transactional analysis and psychoanalysis break the mind into three parts, each part affecting the behavior of the whole, Gestalt therapy concentrates on the person as a whole, which affects its parts. Originated by Fritz Perls, this theory states that one element may be more in evidence than others, but that it is simply standing out against the background of the whole, such that an individual is part of an organism-environment field.

Actions of an individual originate from needs, which may be physiological, such as hunger, or psychological, such as the need to express emotion. The organism attempts to satisfy those needs in order to maintain homeostasis. Many needs, physiological and psychological, exist in the organism at one time, the dominant need, or need most necessary to survival, determining the immediate action. As soon as the need is met, it no longer exists, but a failure to meet homeostasis leads to illness. If a need can not be met, a "split" occurs and the needs are dissociated from consciousness. There is damage done to the function of the organism such that the emotional need, e.g. the need to express anger, is no longer recognized, and is therefore never expressed. The instability leads to anxiety, disorganization, and the inability to have appropriate behavior.

The Gestalt neurotic is unable to

adapt to a changing environment field, and cannot maintain a balance between himself and the world. The mechanisms of neurosis in Gestalt theory arise from the belief that man functions as a part of his environment. In neuroses, the boundary between self and others becomes unclear. If an individual feels no difference between himself and the world, this is confluence. Confluence may also exist between parts of the individual; for example, if a person needs to cry, but suppresses this need physiologically by contraction of the diaphragm. This interferes with breathing. The inability to breathe then becomes confused with the need to cry. It is this type of process which may lead to psychosomatic illness.

Other mechanisms involve the shift of the boundary between oneself and others in order to favor the self. In introjection, the aspects of others are attributed to oneself and the self becomes responsible for something which is actually part of the environment. Projection is the opposite, that is, making the environment responsible for the self and attributing one's own feelings to others. The cold, withdrawn man, for example, may say that others are unfriendly toward him. If someone retroflects, he is turning his feelings towards others on to himself, such that he may reflect hostility to the world by indulging in various types of self-destructive behavior.

The treatment of neurosis in Gestalt therapy uses the continuity of mental and physical processes. The difference in these processes lies in the level of activity. "Doing' at a low level of activity is the mental process and at a high level of activity is the physical process. Perls defines three levels, purely on a basis of energy expenditure, and not on any real difference. These levels are fantasizing (the purely mental process), play-acting (enacting the fantasy), and doing.

Fantasy is diminished reality and thinking is diminished acting. Fantasies can therefore be used therapeutically in their reaction to acting and vice versa. There is no single cause for neurotic behavior which can be discovered giving the patient a cure. There are many events in a person's past which are "unfinished business", making it difficult for the neurotic to participate in the present. The person acts out these past situation as well as his fantasies, playing the parts of both himself and any other people who may be involved in the scene. In this way he is able to resolve his unfinished business, satisfy his needs, and return to a better understanding of himself, gaining the ability to deal with the present.

The emphasis in both Psychoanalysis and Gestalt treatment is on the past. In psychoanalysis there is talk about the past, and an attempt to gain insight into the origin of the illness while Gestalt treatment reenacts the past and thereby attempts to correct psychological defects.

Primal Theory

Primal theory also objects to the idea that neurosis can be cured by understanding its origins. The primal patient is required to feel emotions which have been suppressed for years and have become transmuted into neurotic behavior. According to Arthur Janov, the originator or primal theory, all neuroses have the same basic cause, and are therefore all treated in the same way.

As in Gestalt therapy, there is the concept of needs, called primal needs. These are the needs to be fed, clothed, be held, to grow at one's own pace, and to have sensory stimulation. If these needs are not fulfilled, pain is felt. In order not to feel the pain, the needs are suppressed or denied by the concious self. At this time the needs are still expressed, but since they are not acknowledged, they are expressed by substitute actions, that is, symbolically. The symbolic actions, however, never satisfy the actual original need, and the need therefore remains unsatisfied. The unsatisfied needs are called "Primal Pains" and together they make up the "Primal Pool." Any time when a child is upset, an event is not fully experienced. Each of these disconnected and unresolved events is called a minor scene.

At one point in the child's life, an event finally occurs when he realizes that his needs will never be met. This is the Primal Scene. After this scene, the child shifts his behavior from his real self, to his unreal self. He no longer acts according to his needs and desires, but acts by his defense mechanisms, which have been developed to defend against the reality of his pain. The primal scene usually takes place between the ages of five and seven and can result in any type of neurosis.

The theories here are similar to Gestalt. In both there are needs, which, if unsatisfied are repressed. The unsatisfied need remains and interferes with the individual's functioning later in life. The treatment in both is designed to resolve the unexpressed need, Gestalt by acting out the situation from the past and primal by feeling the emotional pain. Both concentrate on the emotional interpretation; experiencing the past rather than intellectualizing and interpreting as the psychoanalysts do.

Primal therapy requires an intensive course of sessions, occurring daily, and each lasting as many hours as the patient can stand for a period of three weeks. The patient prepares for treatment by spending forty eight hours before the first sessions completely alone in a hotel room, not using any tension relieving devices such as smoking, drinking, or watching television. This is intended to build up as much tension as possible. During the therapy session, the patient lies spreadeagled on the couch. He is, at first, required to open up and show his defense mechanisms by talking freely about his early life. This is much like Freud's free association, except that in this case the patient must feel the emotions he experienced in those early situations. He talks to his parents rather than about them, ensuring that he places himself in the situation. As the feelings become more intense, the patient begins to feel ill. He is urged to say the feeling and this eventually comes out as a scream. This is a primal. The total primal is experienced at about the third day of the treatment, and is a totally engulfing experience. The patient feels the total experience from the past and is unaware of his actual present surroundings.

From this point on, the patient is becoming healthy, and is returning to being his "real self." As further primals are experienced, the defen-

ses are stripped away, the theory being that the totally healthy person has no defense mechanisms. This is in contrast to the psychoanalytical belief that some defenses are necessary, and that the healthy person has "mature" defenses.

Both psychoanalysis and primal therapy stress the importance of early childhood in the genesis of mental illness, and use the examination of the unconscious to achieve cure. Primal therapy examines the unconscious directly, and though acknowledging the existence of symbolic behavior as representative of underlying supressed feelings, does not believe that the examination of the symbols is useful in therapy.

Conclusion

Although primal therapy, and each of the other methods, have certainly had their successes, they tend to be overly simplistic in their definitions of the pathogenesis of neurosis. They each maintain that all illness is caused by one mechanism. I suspect that each of these theories and techniques are applicable to different people and situations; primal therapy, for example being more suitable for one patient, and behaviorist for another, and that they are not mutually exclusive as many of their proponents seem to imply.

The efficacy of each method is difficults to assess since controlled experiments have not been carried out and because success rates are biased by the fact that patients are free to choose their treatment.

There is also a tendency for one mode of therapy to borrow from another, and there are some factors common to any type of therapy. These are non-specific factors, the influence of which is called the placebo effect. Frank (1971) distinguishes the following non specific factors:
1) an emotional, confiding relationship with a helping person
2) anexplanation of the patient's distress which indirectly strengthens the patient's confidence in the therapist
3) provision of new information concerning the nature of the patient's problem, and alternative ways of dealing with them
4) the arousal of hope and the expectation of help
5) the provision of success experiences
6) facilitation of emotional arousal.
Thus, any method of treatment should be helpful.

The method most helpful to any particular person probably varies with the person's illness, background, motivation and intelligence, as well as with other factors. At present, however, most people decide their method from the name they pick out of a telephone book or by a referral from a clinic or family doctor. Until the efficacy of different therapies can be assessed in various situations, it will be impossible to supply the most appropriate treatments for the mentally ill. □

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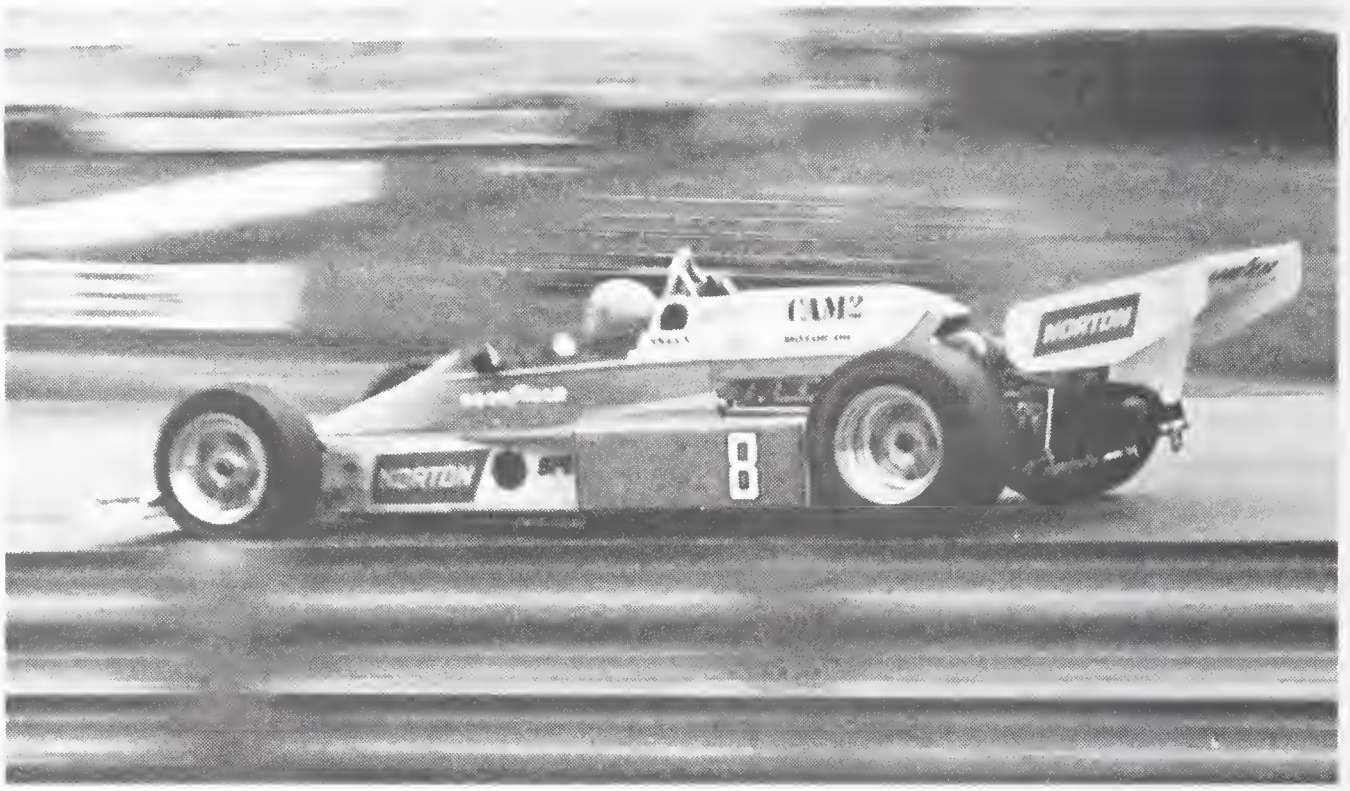

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The Physician As Sex Educator

Cleo Rogakou 8T0

It was not very long ago that Freud started the revolution which drastically changed society's attitudes towards the dissemination of sexual information. It is mainly due to him that members of the medical profession at the turn of the century started to speak candidly about the different aspects of sexual relationships and to consider sex in general to be a proper concern of physicians. Prior to that time the topic was dealt with in quasi-medical or lay publications with highly religious and unrealistic connotations and very little, if any, accurate and useful information.

The most widely used "sex manuals" during the end of the last century and the beginning of the present one were the *Self and Sex* series sold in Canada with the blessings of the Methodist Church and the approval and commendation of many leading medical men. The series included books such as *What a Young Boy Ought to Know*, *What a Young Man Ought to Know*, *What a Young Husband Ought to Know* and the equivalents for girls and women.

In these publications sex was not explicitly condemmed. The authors were progressive and liberal enough to make statements such as: "Without it (sexuality) man would be mean, selfish, sordid and ungracious to his fellow man and uncivil to womankind". At the same time, however, in keeping with the Victorian and Edwardian standards of their times, the authors subtly undercut sex. They certainly provided some quasi-scientific information about plants and fishes but then proceded to strongly advise against extramarital sex, excessive sex, sex after the age of forty-five and onanism at any age. They called the latter a 'consuming secret vice', 'self-pollution' and 'self-abuse'.

In the books for boys and girls are found descriptions such as the following regarding the consequences of masturbating: "The health declines, the eyes lose their lustre. The skin becomes sallow. The muscles become flabby. There is an unnatural languor. Every little effort is followed by weariness... If persisted in, maturbation will not only undermine, but completely overthrow the health. If the body is naturally strong, the mind may give way first, and in extreme cases imbecility and insanity may and often do come as the inevitable result'½. Parents in turn were advised to be 'Argus Eyed' in protecting their children from the temptation to indulge in such a consuming habit.

In the same book series single men were advised against 'self-pollution' which might result in 'dwarfing and wasting of the organ itself.' Sexual intercourse outside of marriage was at the same time condemned and extensive warnings given about the 'Leprosy of lust' (venereal disease). Obscene pictures were to be avoided and explicit novels were not to be read. Tobacco and alcohol use were also discouraged as unnecessary and pernicious stimulation.

Married couples had the author's blessings to indulge, but they were also advised to beware of the ill effects of excess. Exercise, diets and cold baths were recommended substitutes for excessive urges. The age of forty-five was considered to be the age of sexual decline or the "...age of relief from the stress of the sexual impulse". Women in particular were cautioned to avoid stimulating their husbands beyond this age as sexual indulgence might seriously compromise their husbands' health.

Interest in sex during the last century and the beginning of this one was as alive as at any other time. This interest made the *Self and Sex* series books best sellers. It also created a new market for products to restrain sexual urges, as indicated by advertisements in the papers of the time. A multitude of concoctions, magnetic and electrical devices were offered by charlatans as cures for 'sexual weakness, failing manhood and diseases peculiar to women'. Homeopaths, phrenologists, hydropaths and vegetarians became the early sexologists in the absence of interested physicians. They advocated such cures for the ills for sexual excess as meat-free diets containing cornflakes and peanut butter, invented earlier by John Harvey Kellogg, a pioneer in the field. It was in his sanitariums where many of the above 'ills' were treated with what is sold today as breakfast food.

Doctors of the time shied away

from the topic of sex and although they recognized its importance, they invariably apologized for mentioning it. In medical writings dealing with sex-related topics, the authors always promised to stay within the limits of propriety or used introductory phrases such as 'to the pure all things are pure'. In a 1879 textbook of gynecology by one of the most prominent gynecologists can be found the following introduction to a chapter: "Certain causes of uterine disease there are, which I would gladly leave unnoticed, for it is hard, in acceptable language, even to allude to them. But so widespread are the evils resulting from them, that to pass them by would be a flagrant sin of omission". The same author when discussing coitus interruptus stated "It is.. so hard a task to discuss such subjects in acceptable language that I confess to some squeamishness, and would much rather refer you to suitable textbooks were there any".

In the face of such attitudes and inhibitions some progressive physicians had the courage to protest, even before Freud's time, and prepare the ground for a more realistic approach to sex by the medical practitioners. One of them was Dr. Denslow Lewis of Chicago.

In 1899 Dr. Lewis read a paper entitled "The Gynecological Consideration of the Sexual Act" at a meeting of the American Medical Association. This same paper was rejected for publication by the Association's Journal, because, as the editor put it, the Journal did not publish this class of literature.

Lewis' succinct and scientific description of the sexual act was comparable to that of Masters and Johnson. But he did not stop there. He advocated sexual education of children, and equal sexual rights for women. He stated: "Sexual matter should be taught the young at an early age. Girls especially should know the consequence of sexual intercourse. Their modesty may be shocked but their virtue will be saved... When a young man gets married someone should tell him the difference between a virtuous girl and a street walker... She (the bride) should be told it is right and proper for her to experience pleasure in the performance of the sexual act. It is hardly necessary to give instruction in the 'danse du veintre' as the Arabs do, but it is only fair for the girl to understand that there is no immodesty in her active participation, but on the contrary that such action on her part will increase the interest of the event for both her husband and herself".

Lewis was also the first to openly state that sex for women was not just a duty performed for their husbands' benefit. He wrote: '"He (the husband) should understand that he is not the master but the companion of his wife. Her rights should be acknowledged and respected as well as his Marriage, after all, partakes very much of the nature of a business partnership; every principle of justice and equity demands that there be no tyranny or assumption of superiority in a matter like the sexual act,which is vital to the happiness of each partner".

The responses to the paper were unfavourable. A representative one is that of Dr. H. Kelly of Johns Hopkins. He noted, "I am very sorry he (Lewis) has read the paper... I do not believe in the current teaching of the day, i.e. talking freely about these things to children. The child always follows the immediate impulse, and I do not believe in going into further details than necessary in the elementary instruction which the child receives from teachers in botany and the elements of zoology, because I should be very sorry if in this country these matters became as freely talked about as they have been on the other side of the water. I do not believe initial pleasure in the sexual act has any particular bearing on the happiness of life".

The American Medical Association Journal refused to publish Lewis' next paper. Its members, apart from disagreeing with Lewis' viewpoint, were afraid that publication would leave the Journal open to charges of sending obscene literature through the mail.

There is still a lot of controversy regarding sex education and there are still many physicians who avoid the topic of sex in their conversations with patients, even though ignorance regarding these matters is still amazingly wide-spread, especially among young people. But at least there are many publications available today for lay people with accurate and scientific information about sex. For the medical profession there is an entire journal devoted to the physiological and psychological aspects of sex.

Looking back at Lewis's time we must admit that we have come a long way forward. □

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GUIDELINES FOR PUBLICATION

1) All articles intended for publication should be submitted to the editors before the deadline which is usually *six* weeks before the release of the Journal.

2) Submitted articles should be typed (or legibly printed) double-spaced, single-sided on paper 8½" x 11" (letter size) and they should not be more than 15 to 20 pages (3000 to 4000 words).

3) Illustrations, graphs, diagrams and figures should be put on a separate sheet and identified by Arabic numerals. A list of explanatory legends for all the figures and diagrams should be put on another sheet Do not write on the back of photographs.

4) References should be checked with the original sources, designated by Arabic numerals in the text, numbered in order of appearance and put on a separate sheet. Each periodical reference should include in order the author's name and initials, title of the article, Journal name, volume number, page number and year (eg., 1 Rosen HJ: Lumbar Invertebral disc surgery: review of 300 cases. *Can. Med Assoc J , 101: 317, 1969.*)

5) The editors reserve the right to make such editorial changes as are deemed necessary to ensure correctness of grammar and spelling, clarification of statements and conformity to Journal style.

6) Acceptance for publication is subject to the understanding that such material is submitted solely to the Journal and will not be reprinted without the consent of both the editors and author.

Medical Self-Defense

Roman Czudyowycz 8T0

Law and the practice of medicine are today interwoven. The mere knowledge of the law is not sufficient to protect the physician from its repercussions. The doctor must protect himself. Many of the mistakes physicians make result from errors in judgment, excessive shortcuts or unfamiliarity with the legal requirements of the doctor-patient relationship. Medical self-defence involves a balance between optimal medical care and maximal medico-legal awareness.

Legally, physicians are never required to guarantee their results. The law recognizes the fact that medical realities make this impossible. One can only hope for the best. Often, however, a physician will err by verbally guaranteeing (possibly inadvertently) a result. If things then do not work out as expected, the patient would have a broken promise as grounds for a suit. Another error in judgment occurs when a physician allows a patient's demands to direct clinical procedures against his better judgment. A well-known example of this is the prescription of antibiotics for trivial illnesses. A complication arising from such a decision would inevitably leave the doctor responsible because he had made the final medical decision.

Shortcuts

An efficient and productive physician must learn to take certain shortcuts. Each one, however, must be carefully appraised and recognized as a source of potential hazard. Unless self-monitoring of these shortcuts becomes routine, dangerous timesavers can increasingly invade his daily schedule until a disaster occurs.

Telephone diagnosis and treatment constitute an area fraught with error, but a physician is only human, after all, and requires time to eat and sleep. To prescribe treatment over the phone requires that the doctor be able to rely upon the investigative and descriptive abilities of the caller. Thus it should become a policy that the use of this shortcut be reserved only for people with whom the doctor is well acquainted. Even in these cases, appropriate follow-up should always be planned. From a legal point of view, it is a good idea to keep some sort of log when the telephone must be used.

Sloppy, inadequate records, aside from not being able to support a physician's account of his actions, may also indicate to the courts a general carelessness on his part regarding all aspects of his practice. A doctor's records should be written with the thought that someone else may want to read them, including the College of Physicians & Surgeons.

Prescription Writing

Shortcuts in prescription writing are another major, although easily avoidable, source of physician error. Common problems include abbreviations and careless handwriting that lead to misinterpretation by the pharmacist, omission of the patient's age in the case of children and careless medication instructions. Instructions for prescription writing are very specifically laid out in the federal Narcotics Control Act, Food and Drug Act and in the provincial regulations 577/75, and should be followed to the letter. Careful attention must be paid to the date, renewal procedures and amount of drug prescribed in order not to run foul of the above laws. Keeping a carbon copy of all prescriptions is not a bad idea.

While on the topic of prescribing, mention should be made of the importance of familiarity with the drugs one is using. Recent court cases have helped push the concept that the drug package insert, the Physician's Desk Reference, or the C.P.C. may become one of the measuring sticks for the acceptable standard of medical care. It then makes sense for the practising physician to be thoroughly acquainted with the minimum number of drugs needed to cover most situations, rather than having only a superficial knowledge of a large number of drugs. Knowledge of the indications, metbolism, precautions, contra-indications and adverse effects is essential. If a particular case necessitates going outside the package insert, a physician may protect himself by: checking to make

sure there are no alternatives; calling in a consultant; informing the patient of the decision and noting this in the chart.

Another source of shortcut error involves the delegation of procedures to subordinates. The doctor can be held vicariously liable for the torts of his employees while on duty. The solution is to supervise the employees closely and teach proper technique where indicated until a clear picture of his capabilities is achieved.

Doctor-Patient Relationship

The third area of common errors stems from the legal requirements of the doctor-patient relationship. As stated earlier, this relationship is a firm bond in the eyes of the law, that can only be broken through specific and mutually accepted means. It is improper for a physician who is annoyed with a patient or unable to cope with a complex problem to tell him to go find someone else. Until the transition to another physician has been completed, the original doctor is responsible for the care of the patient. Technically, this responsibility extends for twenty-four hours per day, seven days per week. Thus, when vacation time is being planned, it is the physician's duty to ensure that his practice is covered.

Problems frequently arise because a physician fails to recognize that he has accepted and is therefore responsible for a patient. A telephone conversation, a consultation, an emergency room evaluation, may be sufficient to establish the doctor-patient relationship, even if the physician is honestly unaware that this is true.

Physicians who work for companies must be made aware of the fact that their first responsibility lies with the patient. They therefore have the duty to deal with him honestly and completely, regardless of who is paying them.

Consent

The topic of informed consent is particularly complex in medical law. A written consent does not necessarily mean an informed consent. A patient who is asked to consent while sedated for surgery, or one who has not been given all of the alternatives, or one who has not been told of all of the significant risks, may indeed sign the consent form, but the courts may consider the consent to be under duress or not fully informed. The need for complete disclosure increases in proportion to

1)the frequency of complications
2)the gravity of these complications
3)the lack of urgency of the planned procedure
4)the availibility of alternatives or significant differences of opinion among practitioners
5)the newness of the procedure.

In particular, doctors should be very conscientious about consent when the procedure may alter sexual functioning or reproductive capacity, when a procedure is primarily cosmetic, when a patient's mental status is questionable, or when dealing with a minor.

As far as the College of Physicians and Surgeons is concerned, among the most frequent complaints received are those concerning sexual impropriety and billing practices. At this time, any sexual relations with a current or a former patient constitute professional misconduct. A far more common complaint occurs in the performance of pelvic examinations by practitioners. Virtually the only way of protecting oneself from complaints is to have a third party in the room at the time of examination. Otherwise the lone doctor is almost defenseless in front of the Disciplinary Committee.

Billing

Most complaints about billing procedures stem from patients of opted-out physicians or from charges made for uninsured services. In both cases, it is usually the failure of the physician in question to adequately explain the charges before the procedure that results in a complaint. A sign hanging in the office is not considered to be adequate explanation.

For opted-out and especially opted-in doctors, a clear understanding of the O.M.A. Fee Schedule and how it applies to procedures performed, will avoid embarrassment as well as save money. Doctors end up cheating themselves as often as they inadvertently cheat the Plan, due to lack of familiarity with the schedule. All physicians in the province should be aware that their pattern of practice is being constantly monitored via their OHIP profile by the Medical Review Committee. They must constantly balance the need for proper diagnosis and protection from civil liability by thorough investigation, against the risks of disciplinary action by the College for the performance of "unnecessary" tests and procedures. One way of finding out how a particular physician fares among his colleagues is to subscribe to the computer print-outs of these profiles to the General Manager of the plan. The cost is only a couple of dollars a month.

Even if all of the above precautions are implemented, the doctor's best protection against litigation or discipline is quite limited if he fails to heed one important doctrine; that is the maintenance of a good relationship with his patients. Physicians are human and mistakes will be made, but they will just as inevitably be forgiven if the patients are dealt with honestly and if they admire their doctor. The key is good communication.□

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A Different Breed Of Doctor

Rose Varon 8T0

It was 10:00 Monday morning and Dr. Hill and I entered the waiting room filled with new mothers and their babies, and called out the name of the first "two-some" to be seen in the Well Baby Clinic. By 11:00 we had seen 4 of the 10 mothers when our routine was disturbed by a call from the hospital. "Mrs. Clark has just arrived in labour — fully dilated". Six appointments had to be postponed until evening, while we hurriedly left for the hospital.

On the way, Dr. Hill informed me that he was hoping to watch me deliver the baby. Having only just finished my second year of medical school with no experience in obstetrics, I had never seen a delivery let alone assisted at one. But I knew Dr. Hill's philosophies about learning through experience, and sure enough, at 12:00 noon I delivered a 5 pound 6 ounce baby boy (along with cord-clamping, placental delivery, and suturing of a minor tear) with my proud coach standing behind me at all times, instructing and waiting to assist should I need his help.

This is how the first day of my summer job began and it was to be reflective of many more busy days throughout the summer months. I received a summer scholarship from the Medical Alumni Association to work for a family doctor in his semi-rural practice. I felt it necessary to find out for myself exactly what kind of practice a family doctor has; moreover, a family doctor working outside of the big city centres. Because of impressions that overly-qualified clinicians gave to me in my first two years of medical school, I thought that family doctors represented that section of medical students who could not hope to get residency positions in medicine or surgery and so had no choice but to become family doctors. Commonly heard statements in lectures were "this is an important piece of information that all family doctors seem to forget" or "we teach you at the specialist's level and examine you at the general practitioner's level". Not only did I receive the impression that general practice was substandard medicine but that certainly those doctors practising outside of big cities were only there for lack of a more central job opportunity. And so, although I would have been hard-pressed to admit it, I saw family doctors as second-rate doctors practising second-rate medicine — a far cry from Marcus Welby.

This summer job provided me with the opportunity to see what family practice is all about. Dr. Hill's practice involved six half-days a week in the hospital working up patients: at the Ajax-Pickering Hospital each patient is under the supervision of his own family doctor so that when a patient is admitted to hospital he does not come under the care of some strange, new doctor who knows nothing of his past sees his own doctor who knows his history and that of his family. This system is also advantageous for the patient's concerned family who already knows and trusts the doctor who is taking care of their loved one.

In the afternoons we had office hours at Dr. Hill's private office, in addition, on Monday nights there was a clinic for all those who could not make it during the day: usually we would see 25 patients in an afternoon with complaints ranging from twisted ankles to stiff necks, infertility to birth control, colds to allergies, cancer screening to cancer palliation. Dr. Hill functioned as a neonatologist, paediatrician, geriatrician, orthopod, allergist, cardiologist, family counsellor, marriage counsellor, and sometimes simply as a friend. A large portion of his practice was obstetrics, for it is policy at the Ajax-Pickering Hospital that normal deliveries be handled by family doctors. As there is not an anaesthetist present at all times, each doctor must be well-versed in the procedure of natural childbirth, for each expectant mother who plans to have her family doctor deliver her baby does so under the premise that there will be an anaesthetist on hand to help out only if absolutely necessary.

There were many occasions when Dr. Hill's smoothly running office was disturbed by a call either from a woman in labour, or a sick patient who warranted an immediate house call. Somehow though, when patients who had been waiting in the office already for 20 minutes were told that their appointment would be cancelled due to an emergency, they did not seem to be angry or resentful. They knew that they could trust their doctor all the more, for surely if he would leave his office for an emergency for another patient, he would do the same for them if ever necessary: Dr. Hill had won the trust and loyalty of all his patients.

Although many specialists would claim that family doctors lack the experience to handle serious problems, from what I have seen the well-educated and concerned F.P. can diagnose and treat about 90-95% of all the problems he/she encounters; this requires a well-rounded education and much continuing education especially if the F.P.'s practice is rural where he will have much more responsibility. In addition, he/she knows the patient and his family well and so is in a better position than a specialist who does not know the patient personally at all to "treat the patient rather than the illness". I personally would trust my own family doctor to treat my ailments at any time that he felt he was qualified to. He can take care of me, my family, my friends, and when the time comes, he can deliver my baby. I trust him as a doctor and as a friend. □

(continued from page 47)

hormone source (Coutinho *et al.*, 1971). Thus, tubal motility is under some degree of local control by adrenergic nerves; this is in contrast to the complete systemic control of the rabbit uterus. Many investigators have attempted to elucidate the interplay between the ovarian hormones and oviductal adrenergic mechanisms. This might involve changes in the tissue neurotransmitter content, changes in the relative number and/or sensitivity of tissue receptors, differences in the affinity between adrenergic agonist and receptors, or variations in transmitter release or inactivation mechanisms.

At least two research teams have attributed the effect of progesterone to a decrease in -adrenoceptor sensitivity. Hunter and Kendle (1974) came to this conclusion upon finding that the response of isolated oviducts from progesterone-dominant rabbits to adrenaline was less than from estrogen-dominant rabbits. Heilman *et al. (1976)* attributed decreased sensitivity of rabbit oviduct to noradrenaline during early gestation (progesterone dominant) to decreased -sensitivity.

In a recent study by this author (Rheaume and Paton, 1978), -adrenoceptor sensitivity was shown not to vary between estrogen-pretreated and progesterone-pretreated oviduct. The potency of (-) -phenylephrine in the presense of propranolol and the potency of (-)-adrenaline in the presence of cocaine & hydrocortisone (blockers of neuronal and extraneuronal uptake) & propranolol were not altered by hormonal pretreatment.

Several workers have suggested that progesterone accomplishes its inhibitory influence through increased B-receptor activity. Similarly, there are proponents both of increased -adrenoceptor sensitivity and of reduced B-responsiveness with estrogen treatment. Changes in the relative sensitivity of the two adrenergic receptors with hormonal dominance may be of physiological significance; for example, this may control oviduct motility related to ovum transport.

Ovum Transport

Normal Ovum Transport

The transport of ova from the ovarian follicles to the site of implantation is a fundamental step in the reproductive process in the female and is a major function of the oviduct of Fallopian tube. A highly regulated transport is necessary for fertilization, maturation and successul implantation of the egg (Chang, 1950).

The sequence of ovum transprot has been fully elucidated in the rabbit. Normally, rabbit ova pass within minutes through the ampullary portion, pause for several hours at the ampullary-isthmic junction and then move slowly through the isthmus to enter the uterus some 72 hours after the ovulatory stimulus (Pauerstein *et al.*, 1974).

A number of studies have investigated tubal motility or contractility, especially with reference to the transient retention of ova at the ampullary-isthmic junction. Brundin (1965) has suggested that ovum transport through the rabbit oviduct is controlled by the sympathetic innervation of the isthmic portion.

Effect of Exogenous Hormones on Ovum Transport

The time courses of ovum transport is vulnerable to interference by certain sex hormone treatments which have been shown to induce the acceleration or tubal arrest of ova.

In 1935, Burdick and Pincus observed that, following postcoital treatment with estrogenic substances, ova remained in the rabbit oviduct for several days beyond the normal term. Subsequent studies have shown this inhibition of rabbit ovum transport by a single large dose (250 ug) of estrogen on the day of ovulation (Pauerstein *et al.*, 1974a).

On the other hand, pretreatment with progesterone (2.5 - 5 mg) for 3 days prior to ovulation causes acceleration of ovum transport; a high percentage of ova are present in the uterus on day 2 rather than day 3 after the ovulatory stimulus (Pauerstein *et al.*, 1974a).

Both the estrogen-induced arrest and progesterone-induced acceleration of rabbit ova are antagonized by 6-hydroxydopamine and surgical denervation (Pauerstein *et al.*, 1974b). Further, the estrogen effects are inhibited by phenoybenzamine and reserpine (Pauerstein *et al.*, 1974b). Therefore, it is believed that the effects of exogenous hormones are indeed mediated by the intrinsic adrenergic innervation of the oviduct.

Future Work

An accelerated ovum transport would mean that the fertilized ovum enters the uterus prematurely such that the prevailing hormonal conditions and endometrial status are not yet suitable for implantation. hence, interaction of progesterone with oviductal adrenergic mechanisms may be an interesting area of research in fertility regulation at the level of ovum transport. One can appreciate the practical benefits of a progesterone-induced acceleration of ovum transport over a slowing of transport with estrogen, since the latter may cause problems such as ectopic pregnancy.

Much work remains to be completed before the satisfactory analysis of the relationships between steroid hormones, the adrenergic nervous system and oviduct physiology is achieved. An increase in B-adrenocepter activity has been implicated in the reduced responsiveness to noradrenaline of progesterone-pretreated rabbit isthmus. It would be valuable to assess whether this is the result of increased numbers of B-receptors.

Hormonally-dependent adrenoceptor activity has been implicated in the reduced responsiveness to noradrenaline of progesterone-pretreated rabbit isthmus. It would be valuable to assess whether this is the result of increased numbers of B-receptors.

Hormonally-dependent adrenoceptor sensitivity changes have been well documented, at least with reference to effector oviductal smooth muscle. It would be of interest to investigate whether there is also a presynaptic receptor change which would influence the release of noradrenaline from adrenergic nerve endings.

Finally, *in vitro* findings must be

correlated with *in vivo* observations, and preferable in humans, before research on the inter-relationship of ovarian hormones and oviductal adrenergic mechanisms in the modification of ovum transport may ultimately contribute to fertility regulation.□

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FROM CELL TO PSYCHE

A SPECIAL LECTURE SERIES

AUDITORIUM
MEDICAL SCIENCES BUILDING
THE FACULTY OF MEDICINE
UNIVERSITY OF TORONTO

THURSDAY, JANUARY 18, 1979

8:30 a.m. REGISTRATION

9:00a.m. **OPENING REMARKS**
The Honorable Dennis Timbrell,
Minister of Health, Province of Ontario

CELL

9:15 a.m. **Antenatal Detection of Genetic Disorders**
Dr. Noreen L. Rudd
Director, Genetics Clinic,
Hospital for Sick Children,
Toronto, Ontario

10:10 a.m. **The Cancer Problem**
Dr. Phil Gold
Director, McGill University Cancer Center,
Montreal, Quebec

11:05 a.m. **Coffee**

11:25 a.m. **Endorphins: Endogenous Morphine-Like Compounds in the Brain**
Dr. Bruce H. Pomeranz
Associate Professor, Department of Zoology, University of Toronto,
Toronto, Ontario

12:20 p.m. **Lunch**

SYSTEMS

1:30 p.m. **The Prevention of Arthritis through the Preservation of Cartilage**
Dr. Robert B. Salter
Professor and Head of Orthopaedic Surgery
University of Toronto
Toronto, Ontario

2:25 p.m. **A Revolution in Medical Diagnosis: Computed Tomography (CT)**
Dr. Harold G. Jacobson
Professor and Chairman, Department of Radiology, Albert Einstein College of Medicine,
Bronx, New York

3:20 p.m. **Coffee**

3:40 p.m. **Patient Compliance in the Management of Hypertension**
Dr. R. Brian Haynes
Assistant Professor, Department of Clinical Epidemiology and Biostatistics,
McMaster University,
Hamilton, Ontario

7:30 p.m. **Reception and Dinner**
Royal York Hotel
Dr. Martin L. Collis
"Dying Young as Late as Possible"

FRIDAY, JANUARY 19, 1979

9:00 a.m. **Nutrition and the Brain**
Dr. John Growdon
Assistant Professor of Neurology,
New England Medical Center,
Boston, Massachusetts

9:55 a.m. **Cold Water-Induced Hypothermia**
Dr. Martin Collis
Professor, Division of Physical Education,
University of Victoria,
Victoria, British Columbia

10:50 a.m. **Coffee**

11:10 a.m. **Dementia and the Machinery of Intellect**
Dr. Donald R. Crapper
Professor of Physiology,
University of Toronto,
Toronto, Ontario

12:05 p.m. **Lunch**

PSYCHE

1:30 p.m. **Abstract Social Structures: Individual Psychology and Physical Survival**
Dr. Vivian Rakoff
Psychiatrist-in-Chief,
Sunnybrook Medical Center,
Toronto, Ontario

2:25 p.m. **Caring for the Terminally Ill**
Dr. Balfour M. Mount
Director, Palliative Care Service,
Royal Victoria Hospital,
Montreal, Quebec

3:20 **Coffee**

3:40 p.m. **Biomedicine Today and the Human Condition Tomorrow**
Dr. David J. Roy
Director, Center for Bioethics,
Clinical Research Institute of Montreal,
Montreal, Quebec

4:35 p.m. **Closing Remarks**

EVENING: **MEDICAL STUDENTS WEEKEND OPENING PUB**

Dr. Noreen L. Rudd

Director, Genetics Clinic
Hospital for Sick Children
Toronto, Ontario

Dr. Rudd graduated from the University of British Columbia in 1965. Following a pediatric residency at the Hospital for Sick Children, Toronto, she was a fellow in the Department of Genetics at the Rhode Island Hospital, Providence, R.I. Since 1975 she has been the Director of the Genetics Clinic at the Hospital for Sick Children.

Dr. Rudd is currently the Associate Director of the Antenatal Genetic Clinic at the Toronto General Hospital.

Antenatal Detection of Genetic Disorders

Prenatal screening for genetic disorder in Canada is currently aimed at genetic high risk families. These families have ben identified by their past obstetrical history, family history, carrier status, or maternal age as being at an increased risk for having a baby with a serious genetic defect. Prenatal testing using amniocentesis and ultrasonography can now detect open neural tube defects, chromosome aberration, many inborn errors of metabolism, hemoglobinopathies and certain congenital malformations.

Families choosing prenatal testing as an option must weigh the genetic risk against the risk of complications.

Selective abortion is the only practical approach to the diagnosis of an affected fetus as *in utero* therapy for the majority of genetic defects is unavailable. The implications of such decisions are currently being explored.

Screening the general pregnant population for the presence of genetic defects is not yet available. However, a pilot project is being proposed in Ontario to explore the many facets of introducing spina bifida screening to the low risk population. □

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Dr. Phil Gold

Director, McGill University Cancer Center, Montreal, Quebec

A gold medallist from the Faculty of Medicine at McGill University (1961), Dr. Gold is also the Director of the Division of Clinical Immunology and Allergy at the Montreal General Hospital, and a Professor of Medicine and of Physiology at McGill. He has a worldwide reputation for the discovery of carcinoembryonic antigens (CEA) and was the first to demonstrate the existence of specific cell surface antigens on human tumour cells. Dr. Gold is a fellow of the Royal Society of Canada, an Officer of the Order of Canada and has received the National Research Council's Steacie Prize for Science (1973), the Johann-Georg-Zimmerman Prize for cancer research (1978) and the Gairdner Foundation Award 1978.

The Cancer Problem

The magnitude of the cancer problem is staggering from a number of points of view. It remains a socially unacceptable disease that, under prevailing circumstances, will affict one of every four persons presently alive in North America; will wreak psychological, emotional and sociologic havoc on two of every three families; and will account for one of every six deaths, despite a cure rate that has improved from one in five to one in two-three in the past quarter-century.

Cancer is, of course, a generic term for a multiplicity of diseases linked by the common factors of tissue dedifferentiation associated with a loss of contact inhibition, cellular overgrowth and tissue dissemination leading to secondary tumors, or metastases. Aside from a number of relatively rare, but interesting, paraneoplastic syndromes due to inappropriate synthesis of hormones and other materials by the tumor, the clinical manifestations of cancer are primarily due to disruption of normal tissue structure and functions by the tumor mass(es).

Epidemiologic studies of the distribution of cancers in different parts of the world and of populations shifts, as well as of the relationships of such factors as aging to cancer, strongly support the hypothesis that 80% or more of all human cancers are environmentally-induced and have a multifactorial basis. The viral causation of human cancer has yet to be convincingly demonstrated, although a few highly suspicious candidates have been put forward.

Recent improvements in cancer diagnosis have included major technological advances in the fields of imaging and fiberoptic endoscopy, and improvements in cytopathology. Increasing demonstrations of "tumor markers," materials synthesized by the tumor tissue that are either qualitatively or quantitatively inappropriate,

and how the information concerning such markers should be employed in the management of the cancer patient, have provided a good deal of optimism among oncologists.

The mainstays of cancer therapy remain surgery, chemotherapy and radiotherapy, either singly or in combination, with a hope that immunotherapy may join the triumverate in a rational fashion in the future. The need for the increasing use of "protocol therapeutic programs" carried out in established cancer centres is becoming increasingly evident and many of the pragmatic advances that been made in the field of cancer treatment and patient cure are directly attributable to the results of protocol studies. □

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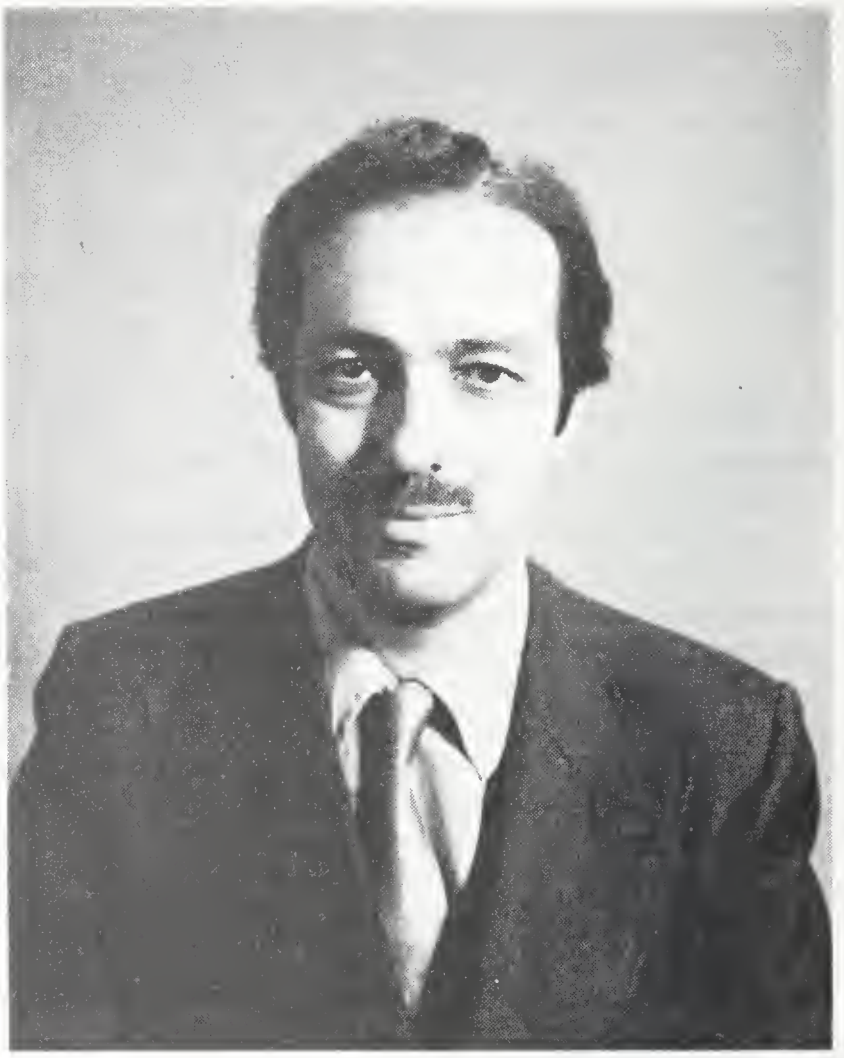
Dr. Bruce H. Pomeranz
Associate Professor
Department of Zoology
University of Toronto
Toronto, Ontario

Dr. Pomeranz is a graduate of McGill University, Montreal, with degrees in Honours Physiology and Medicine. He received his Ph.D. in Physiology from Harvard University, Boston. Since that time, Dr. Pomeranz has concentrated his research on neurophysiology. He came to the University of Toronto in 1968 and continued his interest in neurophysiology. He has become very involved in elucidating the physiological mechanisms activated by acupuncture techniques and the role endogenous morphine-like compounds play in blocking the transmition of pain. It is hoped that these compounds may have a clinical application.



Endorphins: Morphine-like Peptides in the Brain

Endorphins were discovered in 1975 after a search for brain chemicals which bind to the morphine receptor which was isolated in 1973. The discovery of endorphins is considered by many to be one of the major finds of the decade for several reasons:

1) because they are analgesics, endorphins could lead to the understanding of pain physiology and to the first adequate treatment of pain (the commonest of all clinical problems);
2) studying endorphins may help explain addiction and lead to its elusive cure;
3) as the first major psychoactive peptides, endorphins have stimulated the study of dozens of other peptides acting on the brain;
4) endorphins have been implicated in other important phenomena such a acupuncture analgesia and schizophrenia.

Since 1975, research on endorphins has exploded and great advances have been made, largely because of the development or a new field called Neuroscience, which has brought together many disciplines and powerful new methodologies.

To date, there are three known endorphins:
methionine enkephalin (5 animo acids)
leucine enkephalin (5 amino acids)
and beta endorphins (31 amino acids).

They act as either neurotransmitters in the brain or as hormones from the pituitary where they are released to the blood along with ACTH during stress.

1. **Pain:** In the midbrain, endorphins act on the Raphe Nucleus which sends impulses to the spinal cord to block incoming pain signals. In the spinal cord these peptides are present in the dorsal horn where they also block pain signals. Newly synthesized chemical derivatives of endorphins are many times more potent than morphine, but they are unfortunately very addictive. However, three new electrical treatments for pain, which are non-addictive, are being widely used clinically, based on the release of endorphins in the brain, namely electroacupuncture, stimulation of midbrain with indwelling electrodes, and transcutaneous nerve stimulation. The latter is the most attractive method, as it is non-invasive—patients treat themselves at home with a small portable stimulator applied to the skin and there are no side effects. Finally, in relation to pain, the discovery of spinal cord endorphins has led to the epidural injection of morphine for surgery and obstetrics.
2. **Addition:** Opiate addiction is related to disturbances of endorphins. Unfortunately, endorphin injections are no better that methadone replacement therapy. However, over 600 patients in Hong Kong have been cured of addiction by electroacupuncture which works through endorphins. This is now being evaluated by the National Institute of Health.
3. **Psychoactive peptides:** Research is exploding in this area. For example, substance P, a peptide, is a major pain transmitter in the spinal cord. Somatostatin, vasopressin, bradykinin, and others are potent chemicals when applied to various parts of the brain. Their function is largely unknown.
4. **Acupuncture, schizophrenia and other topics:** The ability of electroacupuncture to release endorphins which produce analgesia is the first solid scientific evidence that the 5000 year old Chinese method is not just witchcraft. Its use in the Western world is increasing. Perhaps the most controversial endorphin research relates to its role in schizophrenia. These peptides are elevated during breakdown and the hallucinations are relieved by Naloxone (a receptor blocker). Moreover, kidney dialysis *seems* to completely cure many incurable cases *perhaps* by removing an abnormal type of peptide called leu-endorphin. If this hypothesis holds up, some schizophrenics may be found to have a genetic defect which replaces leucine for methionine in the peptide chain of beta endorphin.

Other putative roles of endorphins listed for brevity include involvement in learning, temperature control, release of pituitary hormones, control of motor movement in the caudate nucleus and many others.

After only 3 years, one cannot be absolutely certain of the true functions of endorphins. Considering that thousands of the world's leading scientists are actively studying these questions, there might be a breakthrough in the near future. □

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Dr. Robert B. Salter

Professor and Head of Orthopaedic Surgery
University of Toronto
Toronto, Ontario

Dr. Salter graduated from the University of Toronto Faculty of Medicine in 1947. Since then he has distinguished himself as a physician, surgeon, teacher and researcher. His areas of research have included joint pathology, dysplasia of the hip and the growth and repair of articular cartilege. The outcome of his work has improved clinical treatment and given a new life for a great number of children. His current research on chondroneogenesis may have far-reaching clinical implications. Dr. Salter's contributions and accomplishments have been rewarded by investiture as an Officer of the Order of Canada, 1977.

The Prevention of Arthritis Through the Preservation of Cartilage

Arthritis remains one of the commonest causes of pain and crippling in man throughout the world because of the combination of the extremely limited power of regeneration of damaged articular cartilage and the relentless progression of the degeneration in such cartilage. Despite the relative success of artificial "joint replacements" they cannot match a normal synovial joint with respect to either function or durability. While the majority of orthopaedic surgery, at least some must pursue the prevention of arthritis through research.

The most preventable forms of arthritis are those that are iatrogenic or doctor-produced—for example arthritis caused by certain methods of orthopaedic treatment that result in continuous compression of articular cartilage, arthritis secondary to prolonged immobilization of joints and arthritis that follows repeated intra-articular injections of hydrocortisone. Experimental investigations in animals have eludidated the pathogenesis of these forms of iatrogenic arthritis and have led to methods for their prevention.

The completely new concept of continuous passive motion of a damaged joint has been developed in an attempt to stimulate regeneration of articular cartilege. Experimental investigation of this concept in the rabbit have proven that whereas both immobilization and intermittent active motion of damaged joints are associated with very limited regeneration of articular cartilage and the development of late arthritis, continuous passive motion has a remarkably stimulating effect on the regeneration of cartilage and greatly reduces the incidence of late arthritis. □

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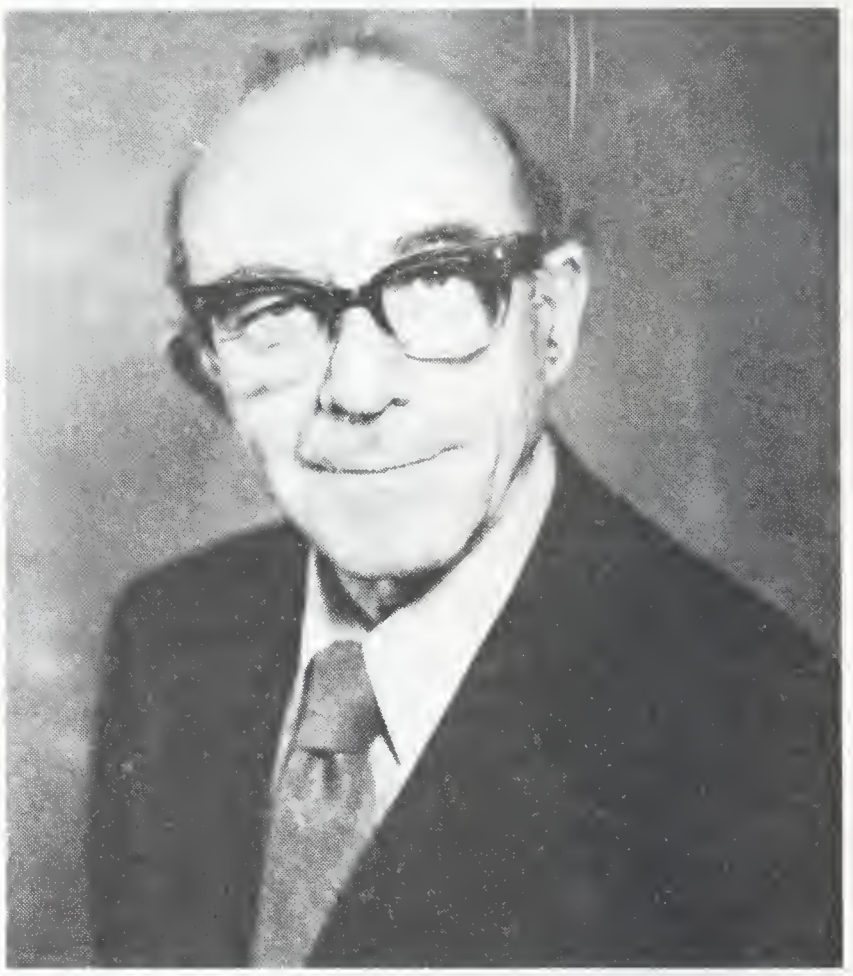
Dr. Harold G. Jacobson

**Professor and Chairman,
Department of Radiology,
Albert Einstein College of Medicine
Bronx, New York**

Since receiving his medical degree in 1936 from the University of Cincinnati, Dr. Harold Jacobson has led an active and acclaimed medical career. He has held numerous offices and special appointments including the Presidency of the Radiological Society of North America (1966). He is a cofounder of the International Skeletal Society and is a member of the editorial board for several journals. Among his many awards and honours are the gold medal of the Radiological Society of North America (1972) and an Honorary Fellowship in the Royal College of Radiologists, London, England (1978). Dr. Jacobson is a respected author of many scientific papers and books. He is an outstanding speaker, who has lectured extensively in the U.S.A. and twenty other countries.



A Revolution in Medical Diagnosis: Computed Tomography (CT)

The brilliant formulations of Godfrey N. Hounsfield in 1972 resulted in the development of computed tomography (CT). This non-invasive modality revolutionized neuroradiology and has expanded enormously the scope of diagnostic accuracy in a variety of disorders affecting the abdomen and chest and even the skeletal system. The application of this technical achievement has altered significantly a good part of medical practice today, with even greater potential for the future.

In this presentation emphasis will be given to the efficacy of CT of the head in the diagnosis of non-neoplastic and neoplastic disorders affecting the skull and its contents. CT is diagnostically definitive (often with no need for angiography or other invasive studies) in such entities as epidural and subdural hematoma, aneurysm and A-V malformation, brain atrophy, hydrocephalus, abscess and hematoma of the brain, virtually all intracranial neoplasms and a whole variety of disorders primarily affecting the bony calvaria and facial bones.

Although perhaps less dramatic, CT of the abdomen, chest and skeletal system contributes considerably to the accurate diagnosis of a number of disorders affecting these areas. In the abdomen, these include the accurate delineation of neoplastic and non-neoplastic masses of the liver, pancreas, kidneys and retroperitoneal tissues. In the chest, CT has not only proved extremely helpful in the demonstration of various pathological entities, but plays a vital role in the demonstration of various pathological entities, but plays a vital role in the demonstration and elucidation of anatomical details of various mediastinal structures. Even the skeletal system shares in the exciting contributions of CT, which often delineated soft-tissue masses, defining their relationship to contiguous bony structures and contributing to the diagnosis of various skeletal lesions. □

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Dr. R. Brian Haynes

**Assistant Professor, Department of Clinical Epidemiology and Biostatistics
McMaster University
Hamilton, Ontario**

Dr. Haynes was the gold medallist in 1971 from the Faculty of Medicine at the University of Alberta. He has completed both a M.Sc. in clinical epidemiology and biostatistics and a Ph.D. in the blood and cardiovascular programme at McMaster University where he is now on the active medical staff. Dr. Haynes has many publications on compliance with antihypertensive medication both in private medical practice and in industrial and community settings, and is the co-author of two books dealing with compliance with therapeutic regimens.

Patient Compliance With Antihypertensive Medications

Hypertension is the most important treatable cause of

premature vascular death in our society. Unfortunately, its treatment usually requires that the victim consume chemicals, packaged in pill-shaped reminders of their disease, daily for the rest of his life. Perhaps not surprisingly, over half of hypertensive patients drop out of treatment entirely within the first year of therapy and, of those who remain under care, only about two-thirds take enough pills to keep their blood pressure down. The major challenge in treating hypertension is thus detecting and managing problems in patient compliance. Recent studies have shown this can be done humanely, effctively and economically.

Detecting low compliance with therapy can be accomplished by carefully monitoring attendance at appointments, assessing response to therapy, and then asking those who fail to respond to treatment about their compliance. It can be shown that these simple procedures will detect most low compliers.

Improving low compliance with antihypertensive therapy cannot be achieved with the most commonly proposed solution of "patient education." However, behaviourly-oriented strategies, such as increased supervision and self-home blood pressure recording with positive reinforcement, are relatively successful. These procedures are time-consuming, however, and therefore expensive. The future may bring longer acting therapies or even "cures", but until then, to be successful in treating hypertension, the practitioner must develop and employ "compliance skills."□

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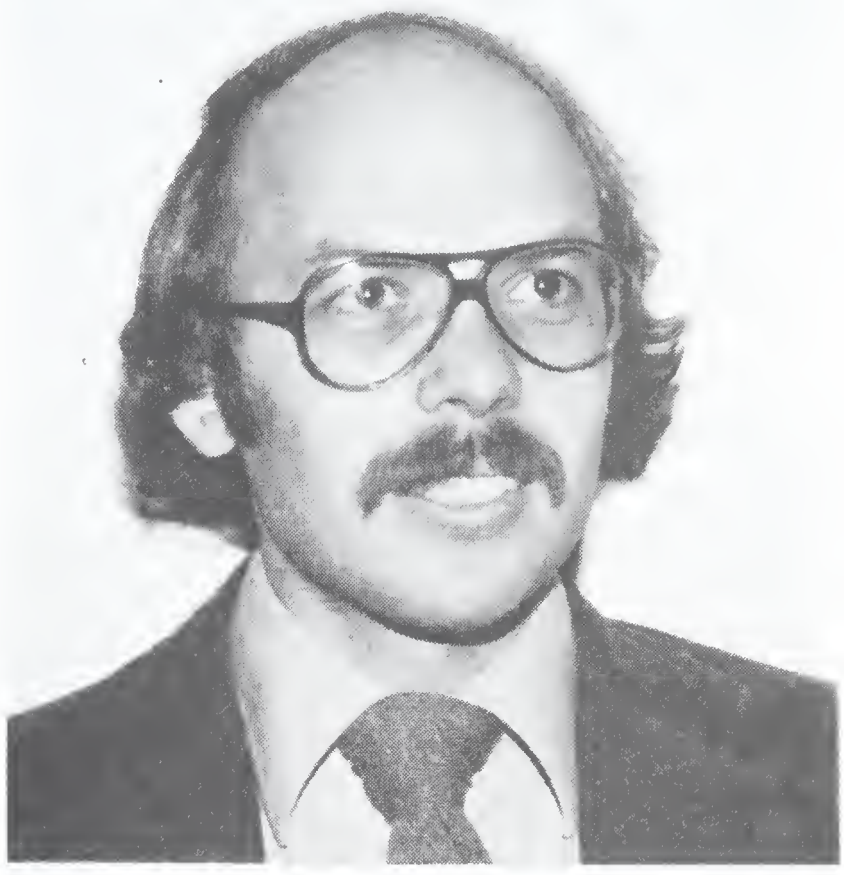

Dr. John Growdon

Assistant Professor of Neurology
Tufts—New England Medical Center
Boston, Massachusetts

Dr. Growden graduated from the University of Pennsylvania Medical School in 1965. He has since pursued a career in clinical neurology and neurophysiology at the Massachusetts General Hospital and the Harvard Medical School. A significant amount of his work is directed towards the neuropharmacology of Huntington's Disease and Tardive Dyskinesia. It is hoped that dietary precursors of specific neurotransmitters may alleviate the symptoms of these disease states. Dr. Growden is currently an Assistant Professor of Neurololgy at the Tufts University School of Medicine and a staff Neurologist at the New England Medical Center in Boston, Massachusetts.

Nutrition and the Brain: Dietary Precursor Control of Neurotransmitter Synthesis Clinical Uses

Dietary neurotransmitter precursor therapy illustrates a new mode of medical treatment for patients with neurologic and psychiatric diseases. It is based on the observation that the availability of tryptophan, tyrosine, and choline to brain neurons normally influences the rates at which they can synthesize serotonin, catecholamines, and acetylcholine. In each instance, the brain is unable to synthesize the precursor, and must therefore obtain it from the systemic circulation. The rate at which the precursor is taken up into the brain varies as a function of its plasma concentration; this, in turn, normally fluctuates according to the particular composition of a meal, and can be increased at will by administering synthetic diet mixes. This is a novel concept in nutrition and the brain, since it was previously believed that, aside from the effects of toxins and vitamin deficiencies, the adult brain was largely unaffected by changes in the diet. It is now known that daily fluctuations in tryptophan, tyrosine, and choine plasma levels that normally occur following dietary consumption

exert a powerful influence on the neurotransmitter composition of the brain. It is somewhat surprising that Nature would allow our choices of foods to influence such an important process as neurotransmitter synthesis, and the evolutionary advantages of this "open-loop" control remain obscure. Nonetheless, this general principle of precursor dependence allows us to explore the physiologic consequences of enhanced neurotransmitter synthesis, and to treat disease states that are associated with deficient serotoergic, catecholaminergic, or cholinergic tone. □

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Dr. Martin L. Collis

Professor, Division of Physical Education
University of Victoria, Victoria, B.C.

Dr. Collis has been involved for more than 6 years with the "Man in Cold Water" project at the University of Victoria which has led to the development of the survival behaviour's H.E.L.P. and Huddle, new rewarming techniques and the U-VIC thermofloat jacket. Through his work, there has been a general increase in the awareness of the dangers of cold water. Dr. Collis has also made significant contributions to fitness research including his role as a co-developer of PAR-Q, (Physical Activity Readiness Question-naire), an essential ingredient of the Canadian Home Fitness Test. In addition to his scientific activities he is working on the recording of fitness and lifestyle songs.

Cold Water-Induced Hypothermia

Over the past 7 years a series of experiments have been undertaken at the University of Victoria to study the response of man to cold water immersion, and to develop practical solutions to the problems of cold water survival. In early work metabolic rates and rectal temperatures were continuously monitored for humans immersed in cold ocean water (4.0-18.2°C). A prediction equation for survival time was developed based on the thermogenic response of the subjects. The effect of behaviors developed.

A thermographic evaluation of relative heat loss areas of humans during cold water immersion was made to illustrate the areas of high heat loss. Subsequent studies have included the plasma norepinephrine response to sustained immersion, the interaction of peripheral and core receptors in thermoregulation and the affect of alcohol on cooling rates.

Information from these studies has been to improve the science of cold water survival and to evaluate a variety of protective clothing. Applied outcomes of the work include the development of the UVic Thermofloat Jacket and Sea Seat, which together provide a ten fold increase in the predicted survival time of someone in cold water. □

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Dr. Donald R. Crapper

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Dr. Crapper, a 1957 graduate of the University of Toronto's Faculty of Medicine, is also an associate professor in the Department of Medicine at the University of Toronto and is a staff neurologist at the Toronto General Hospital. His work is considered to represent an important forefront in research into senile dementia of the Alzheimer's type. Dr. Crapper is the scientific advisor for the newly formed Alzheimer's Society, a community organization for family support, education and research, which developed from his concern for the needs for support of families of patients with the disease.

Dementia and the Machinery of Intellect

In addition to the human tragedy associated with dementia, Alzheimer's disease offers an unique window into the cellular substructure of intellectual processes. The possible etiological roles of slow viruses, toxic trace metals and immunological factors will be related to alterations in the genetic apparatus and protein syntheses. Current views concerning these molecular events will be linked to the physiological functions of intraneuronal transport, transmitter synthesis and neuron electrical activity. Selective alterations in neuronal function will then be considered in terms of the disconnections within neural nets associated with failure in information processing and the dissolution of intellectual processes characteristic of dementia.

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Dr. Rakoff completed an M.A. in psychology at the University of Capetown, South Africa prior to his medical degree at the University of London (1957). He received his diploma in psychological medicine from McGill University in 1963 and served as a staff psychiatrist and Director of Research at the Montreal Jewish General Hospital before coming to Toronto in 1968. At the University of Toronto he has served as Professor and Director of Postgraduate Education for the Department of Psychiatry and as Professor of Psychiatric Education. He has written and lectured widely on such topics as alcoholism, obesity, psychiatric education, death, the families of concentration camp survivors, family therapy and adolescence.

Abstract Social Structures: Individual Psychology and Physical Survival

There seem to be certain human necessities which are as vital to human beings as food and shelter: A sense of history, a community, a mythology that shapes values, are all factors that appear to be necessary for the survival

of individuals and communities. There is a conceptual problem arising from this observation-how do these highly abstract currents of history and social structure get into the individual phyche.

We appear to be genetically pre-programmed for the expectation of a community. All human children learn language with amazing speed, they soon differentiate between familiar people and strangers; folk lore and anthropology underline the importance of the family. And few human societies are without structured myths concerning their own history and the ways in which people are expected to act.

It appears that when people are disrupted in their early relationships and when they have been removed from their history, by excessive mobility, political disruption, or personal pathology, and when they have no attachments to explicit ethical systems, certain forms of psychopathology emerge. Suicide rates are highest among the highly mobile, the unattached-the anomic. A sense of rootlessness and a yearing for a community of almost any kind is a characteristic of alienated youth. Urban crime is at its highest among people who feel themselves dissociated form the society at large and from their own historical background.

The problem then is how to repair the lacks that have developed as a result of the tremendous social expansion of the last couple of centuries, in which people have gained huge amounts of freedom, which they have used well for the most part, but which has deprived them of many of the assurances against the feeling that their life is meaningless and frivolous and which causes them to present as social and medical problems. □

Dr. Balfour M. Mount

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Dr. Mount was the founder and has been the director since 1975 of the Palliative Care Service of the Royal Victoria Hospital and is a world recognized expert in the area of death and dying. He has conducted research and written extensively in this area, has produced a videotape on bereavement and is in great demand as a lecturer. Dr. Mount delivered the Royal College Lecture this year on the topic of palliative care of the terminally ill. He is also an associate urologist at the Royal Victoria Hospital and a associate professor in the department of surgery of McGill University.

Palliative Care Of The Terminally Ill

The complex needs of terminal patients and the importance of psychological, spiritual and interpersonal considerations place special demands on the physician. He is required to be an internist skilled in the fine titration of medications against symptoms, a psychiatrist, a philosopher and a social worker. But the end of life is also a time of unparalleled potential for personal and interpersonal growth for the patient and his family. Having assisted in the realization of this potential, the physician may find that he has shared in the growing process.

A decision that further "active therapy" is in appropriate should be associated not with a pessimistic attitude that "nothing more can be done", but with a positive statement that while therapy can no longer be expected to make an impact on the disease process, much can be done to control symptoms and assist the patient in living as fully and as comfortably as possible.

The needs of the terminally ill and their families can be ment within the general hospital setting with a service that includes:

—a trained multidisciplinary team,
—a hospital ward, home visiting team, and consultation service,
—emphasis on specialized nursing care and the treatment of pain,
—concern for the patients' psychological emotional and spiritual needs,
—treatment and care of the patient and the family as a unit, and
—continuation of staff involvement with the family during bereavement.

Chronic Pain - Its Nature And Management

When the intractable pain of malignant disease is present, its treatment is the central focus in palliative care. the goals of the therapist should be:

a) Identify the Etiology:
b) Preventing Pain:
c) "Erasing" Pain Memory:

d) An unclouded Sensorium:
e) A Normal Affect:
f) Ease of Aministration:

An oral narcotic mixture containing morphine, taken in conjunction with a phenothiazine, has provided excellent pain control.

With careful dosage adjustment, the mixture can be used for periods extending to several years without dose escalation.

Adverse effects are infrequent with this approach. Those to be watched for include sedation, nausea and vomiting, constipation, respiratory depression, tolerance/dependence, and extrapyramidal effects.

If the pain is localized, radiation therapy, nerve block or some form of ablative neurosurgical procedure may provide excellent control.

Fears Of The Dying

The fear of pain and mutilation is frequently encountered. A realistic appraisal of potential problems and reassurance that they will be dealt with, will go a long way towards allaying relevant anxieties.

A second important fear is that of isolation. Reassurance from the physician that he will continue to supervise the patient's care with interest and concern, and his use of this opportunity to facilitate family discussions and expression of feeling, are effective weapons in combating isolation.

A third fear is that of loss of control and of increasing dependence. This is particularly a problem for the previously self reliant individual.

A fourth area of fear is for the future of the patient's loved ones.

A further anxiety has been termed "reflected fear"; fear the patient sees in the eyes of those around him.

Time must be taken to talk through the implications of each of these problems and anxieties they produce.

A candid, honest, yet supportive approach will produce less anxiety in the long run than well intentioned dishonesty or a lack of communication. The "conspiracy of silence" hinders the patient's relationship with those around him.

At The Time Of Death

When death comes it is usually painless and peaceful for a patient dying of malignant disease. Mental and physical pain commonly recede during the last few days and almost always in the last hours.

It is often expected that the physician will come to the bedside when the patient dies. He can make an important contribution towards the resolution of the family's immediate problems and future "grief work", if he is present at that critical point.

Experience supports the observation, made by Parkes, that bereavement follow-up by a nurse or physician involved in the death makes an important difference to the successful resolution of the family's grief. □

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Dr. David J. Roy

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Dr. Roy is a Roman Catholic priest of the Blessed Sacracment Congregation. He has a doctorate from Angelicum University in Rome. The Center for Bioethics which he directs is unique in that it is housed within the Clinical Research Institute of Montreal. Thus, this center for ethical reflection is in close association with experimental clinical research and is a concrete expression of the need which Dr. Roy perceives to anchor ethical reflection in new scientific knowledge and the methods of its discovery. Dr. Roy has addressed many areas of concern through his writings and lectures and is currently the principal investigator for an interdisciplinary project on the medical, ethical, legal and social determinants of treatment policy for the seriously defective newborn.

Biomedicine Today And The Human Condition Tomorrow

Some of the developments in medicine today are technically phenomenal, though philosophically and

socially prosaic: they simply buttress traditional values. Other developments are ethically paradoxical: they set up difficult value conflicts. A number of advances in the broader domain of biomedicine are socially and ethically dramatic: they promise to alter radically traditional patterns of behavior and relationship, to modify profoundly institutions that have been marked by stability. A further class of biomedical innovations could prove to be philosophically and humanly meta-dramatic/ they would appear capable of taking us beyond, outside of the human drama as we have known it to be for centuries. Could these innovations radically alter the state or condition we have called human for thousands of years?

In a range of cases, the power of biomedicine today—its ability to affect changes—reaches far beyond earlier, more restricted notions of therapy. The reconstruction of human beings and of social institutions—not simply the restoration of health and the containment of the ravages of disease—increasingly appears to be a less utopian, less science-fictional expectation of what contemporary biomedicine is and will be able to deliver.

Medicine is not simply a neutral, fact-bound, value-free science operating within a restricted domain of human experience. Human values, individual and social, are an integral component of the medical enterprise. it may well be the case that value judgements guide medicine silently and authoritatively — even efficiently — most of the time. Value judgments, of course, are linked to normative images of what human means. As contemporary biomedicine makes its contribution towards a profound modification of these normative images can it avoid collaborating with others to develop a renewed philosophy of medicine and an updated philosophy of the human condition?□

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